16766

The Marquis of Stafford.

S.
24-11-06

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TRANSACTIONS

OF THE

SOCIETY

INSTITUTED AT LONDON,

FOR THE

ENCOURAGEMENT

OF

ARTS, MANUFACTURES, and COMMERCE;

WITH THE

PREMIUMS offered in the YEAR 1798.

VOL. XVI.

LONDON:

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M.DCC.XCVIII.

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PREFACE.

AS the arrangement of the different ſubjects in the following pages continues as nearly as poſſible the ſame with that in ſeveral of the former Volumes of theſe Tranſactions, it is needleſs to ſay any thing further on that head; we therefore proceed to enumerate ſome of the principal ſubjects that form the preſent Volume; and firſt, the matters for which Premiums have been firſt offered in the courſe of the preſent Seſſion. Among theſe, in the Claſs of Chemiſtry, will be found one for the diſcovery of a Red Pigment for Oil and Water Colours, equal in brilliancy, and ſuperior in point of durability, to any hitherto in uſe: of how much advantage the attainment of ſuch a Colour will prove to all artiſts in painting, is too obvious to

need any comments. Under the Claſs of Manufactures will be found Premiums, now firſt offered, for taking Porpoiſes, and extracting the Oil from them. It being well known that great devaſtation is continually made at the mouths of the principal rivers, as Thames, Severn, &c. by theſe voracious animals, on the Salmon and other fiſh, at the ſeaſon when they leave the ſalt water and come into the freſh to ſpawn; and it having alſo been ſaid, that in the northern parts of Europe conſiderable quantities of Oil are extracted from them; it was judged a proper object of the Society's attention to endeavour, by proper rewards, to ſtimulate our fiſhermen on the coaſts of Great Britain to inſtitute a Fiſhery for Porpoiſes, and thereby not only ſecure the fiſh that would otherwiſe be devoured by them, but alſo obtain an additional quantity of Oil, of which ſuch great abundance is conſumed in lamps, and a large proportion fetched from the ſouthernmoſt extremity of America.

Under

Under the Claſs of Mechanicks, the reader will find a Premium, now firſt offered, for a ſubject of great importance, no leſs than the diſcovery of a Quarry of Stone, fit for the purpoſe of Mill Stones, for grinding Wheat, and equal, in all reſpects, for that purpoſe, to that ſpecies of Stone univerſally known by the name of THE FRENCH BURR. Whoever adverts to the circumſtance of all the fine flour in this Country being ground by Stones hitherto ſuppoſed to be only procurable from France, and that no others are yet known, by which ſuch fine flour can be prepared, will readily allow the propriety of the Society's offering a handſome Reward for the diſcovery, in our own Country, of a material that will effectually anſwer ſo deſirable a purpoſe.

Although the Claims for the Premiums offered by the Society have not been, during this Seſſion, ſo numerous as in ſome former years, yet it is preſumed there will be found very conſiderable information and entertainment in the following pages. The Papers

of Mr. Davis and Mr. Phillips will throw great light on the manner of cultivating the different kinds of trees they ſeverally deſcribe; and the diſcriminating the different kinds of Oſiers, as laid down in the account given by the latter of thoſe Gentlemen, cannot fail being highly uſeful to all perſons who attend to the culture of Oſiers, of which vaſt quantities are continually in uſe, and the manufacturing of which into baſkets, &c. furniſhes employment to great numbers of induſtrious poor. The Papers alſo of Mr. Harper, Mr. Webſter, and Mr. Exter, will furniſh much uſeful information on the ſubjects treated by them.

In the Preface to the Fourteenth Volume of theſe Tranſactions mention was made of the advantage likely to accrue to the Kingdom at large from the ſpirit of improvement that appeared to be taking place in the more diſtant parts of the Country; and here it will alſo be ſeen, by the Papers of Mr. Peart, that the improving and cultivating Waſte Land, even among ſome of the

the moſt bleak mountains in the northern parts of England, is largely extending.

Mention has formerly been made of the advantages that, in all probability, will in future ariſe from the Culture of Rhubarb in this Country; and the Paper of Mr. Jones will prove that the growth of that uſeful plant is increaſing.

At a time when Botanical Studies are ſo much and ſo properly attended to, as they are at preſent in this Country, the diſcovery of ſome mode, whereby the Seeds of Plants may be transferred from one diſtant part of the globe to another, in a proper ſtate for vegetating, becomes an object of no ſmall conſideration; and the Society have, for many years paſt, continued to offer Premiums, in order to obtain ſome method of accompliſhing that end; but it will be found under the head of Chemiſtry (under which Claſs all the Premiums for this purpoſe have been offered), that, by a Paper received from John Sneyd, Eſq. of Belmont, in Staffordſhire, ſome trials have been made,

which promiſe to effect the buſineſs; and it may be here neceſſary to obſerve that, ſhould any perſon put in execution the hints given by Mr. Sneyd, it will be highly ſatisfactory to the Society to be informed of the reſult; and any information will alſo be thankfully received on the ſubject of the Paper from Mr. Brown, reſpecting the formation of Manure, inſerted under the ſame Claſs.

It has already been obſerved, both in the Fourteenth and Fifteenth Volumes of theſe Tranſactions, that Opium, of an excellent quality, has been collected from Poppies grown in England, and conſiderable Premiums have been offered for obtaining quantities of that uſeful drug: in order to furniſh every poſſible information towards obtaining that deſirable end, there is inſerted, in this Volume, an account of the method practiſed in India, with a cut of a ſimple Inſtrument, uſed by the natives, for making inciſions in the Poppy heads; this, it is believed, will forward, in a great degree,

gree, the intention of the Society on this ſubject.

Various attempts have been frequently made to diſcover, if poſſible, the manner of Painting practiſed by the beſt artiſts of the Venetian School, ſo as to produce ſuch a brilliancy, and at the ſame time ſuch an harmony of colouring, as form the genuine characteriſtic of thoſe artiſts. During this Seſſion ſome Papers on this ſubject have been ſubmitted to the Society's conſideration; and that part of them which more immediately relates to the mode of Colouring, is inſerted under the head of Polite Arts. How far it agrees with thoſe methods that have, within theſe few months, been told as ſecrets to ſome of our eminent artiſts, muſt be left to them to determine: certain it is, that Mr. Sheldrake, the Gentleman from whom theſe Papers were received, is uninformed of thoſe ſecrets, and has diſcovered this method of painting by dint of application and ſtudy; and ſome artiſts of conſiderable eminence, who were conſulted on the occa-

ſion,

ſion, agreed that Mr. Sheldrake's method of painting was not only different from that commonly practiſed, but an improvement of it. The other part of theſe Papers, which relates more particularly to the preparing of Oils and Varniſhes, and ſeems rather to relate to chemical proceſſes than thoſe branches that uſually come under the denomination of Polite Arts, will make a part of ſome future Volume of theſe Tranſactions.

In the following pages, under the Claſs of Mechanicks, will be found a very ingenious improvement of that kind of machine called a Mangle, which has of late years become of very general uſe in almoſt every family; and, under the idea of Patents having been granted for making them, they have been ſold at very exorbitant prices.

Here too will be ſeen an Eſcapement for Watches, contrived and executed by a very ingenious artiſt in a diſtant part of the kingdom; and however ſome parts of this Eſcapement may appear to bear a reſemblance

to

to what has been already in uſe for the ſame purpoſe, which in ſuch caſes may perhaps be unavoidable, yet, in the opinion of ſome of the moſt competent judges, the whole machine afforded ſuch marks of original genius in the perſon who produced it, as deſervedly entitled him to the Reward adjudged to him.

Every attempt to expedite and bring to perfection the Art of Ship-Building muſt univerſally be allowed a proper ſubject of the attention of this Society; and a Model of a very ingenious contrivance for drawing Bolts in and out of Ships, with more expedition and firmneſs than by the method hitherto practiſed, having been produced this Seſſion, the ingenious inventor has been honourably rewarded; and a complete Print, and Deſcription of it, is now given to the Public.

Beſides the repreſentations of the ſeveral Models in this Claſs, now publiſhed, it may not be improper to ſay, that the Models themſelves are reſerved in the Society's Repoſitories,

poſitories, for the inſpection and uſe of the Public.

Under the Claſs of Colonies and Trade, is inſerted a Letter from the ingenious and indefatigable Superintendant of the Botanic Garden in the Iſland of St. Vincent; in which Letter an account is given of the introduction and thriving ſtate of ſeveral uſeful Plants in that Garden, and, among others, of the ſucceſs that has attended the importation of the Bread-Fruit into that and other Iſlands in the Weſt Indies. Highly meritorious as it moſt aſſuredly was in Government to intereſt itſelf ſo much in the obtaining and tranſplanting that Fruit, yet it muſt be acknowledged that this Society, fully convinced of its utility, from what had been ſaid of it by all the voyagers to the South Sea, from the time of Dampier to Captain Cook, began ſo early as the year 1777 to offer Premiums, both honorary and pecuniary, to the perſon who ſhould firſt convey any of the Plants of the Bread-Fruit to England, in order to their being ſent to the

Weſt Indies; and although, when Government had intereſted itſelf in the obtaining that Tree, the Society judged it not neceſſary further to continue their pecuniary Reward, yet it is ſtill freſh in the memory of many Members, with how much pleaſure Capt. Bligh was received when he attended the anniverſary diſtribution of Rewards in the year 1794, and received the higheſt mark of honour in the power of the Society to beſtow, as a juſt tribute to his perſeverance and merit.

By the entertaining and inſtructive Letter received from Mr. Sievers, one of the Correſponding Members, who formerly reſided in England, it is evident that the benefits ariſing to mankind from this Society have not been wholly confined to this Country; for we have now learnt that the late Empreſs of Ruſſia, whoſe greatneſs of mind was apparent in all her conduct, having ſeen one of the Books of Premiums, annually publiſhed, eſtabliſhed a Society, ſimilar to this, in her dominions, which ſtill exiſts, and has

has been attended with great advantages. The Culture of Silkworms, which has often been conſidered as practicable, to advantage, in this Country, is alſo ſhewn, in Mr. Sievers's letter, to be carried on in climates more inhoſpitable than this; and the publication of what he ſays on that ſubject may probably tend to the making ſuch experiments as may prove the practicability of eſtabliſhing that buſineſs, or ſhew the futility of attempting it.

A circumſtance has occurred during the laſt Seſſion, which it is neceſſary the Public in general, and more particularly all thoſe who may intend to become Candidates for the Society's Rewards, ſhould attend to; it is this:—

In the year 1797 a Bounty of Thirty Guineas was given to Mr. Adam Scott (ſee Vol. XV. page 226), for his invention of an Inſtrument, called by him a Mole-Plough, on condition of the Plough being left with the Society for the uſe of the Public; and

it was ſtated, that theſe Ploughs could be ſold in London at the price of Two Guineas and a half each. Many months had not elapſed, before an Inſtrument, very ſimilar in its conſtruction to that of Mr. Scott, was offered for ſale at the enormous price of Ten Guineas, under the idea of a Patent having been granted for the ſole making and vending ſuch Inſtrument; and it appeared, by a letter received from Mr. Scott, that he had himſelf acted as an agent in the ſale thereof. This induced the Society to reſolve, that Mr. Scott cannot, henceforward, be admitted a claimant for any Reward from them.

A Wood Cut of Mr. Scott's Plough, together with the Society's Advertiſement on the occaſion, is here inſerted.

Mr.

MR. *ADAM SCOTT*'S MOLE-PLOUGH.

a, the handle, one only being uſed, as two were found unneceſſarily to increaſe the price of the Plough; this handle, which is in length ſix feet, is mortiſed into the beam at *b*:—*c*, the beam, ſix feet eleven inches long:—*d*, the coulter, fifteen inches long, and two and a half wide, wedged as uſual:—*e*, the cone or mole, made of caſt-iron, twenty inches long, and two and a half diameter at its baſe, having an upright piece of bar-iron, two feet long, and three inches and a half broad, with a ſharp edge, which, paſſing through the beam at *f*, is held faſt by wedges; and the pin *g*, being put through one of the holes in the bar, ſerves to regulate the depth of the cavity below the ſurface of the land, the lower ſide of the beam being in contact with the ground during the working.

THE Society for the Encouragement of Arts, Manufactures, and Commerce, in the year 1797, previous to the date of any Patent for ſuch an Inſtrument, gave a Bounty of Thirty Guineas to Mr. ADAM SCOTT, of Guildford, in Surrey, for his invention of a Machine for the purpoſe of under-draining Land, called by him a MOLE-PLOUGH, which Plough is reſerved in the Repoſitory of the Society for the inſpection and uſe of the Public; and a Print and Deſcription thereof has been publiſhed in the Fifteenth Volume of the Society's Tranſactions; and, in the opinion of experienced workmen, ſuch Ploughs can be made and ſold in London at the price of Two Guineas and a Half each.

The Society, therefore, in order to prevent any impoſition on the Public, by being compelled to purchaſe ſuch Ploughs at the enormous price of Ten Guineas, under the idea of a Patent having been obtained for the ſole making and vending them, think proper hereby to ſtate, that any perſon is at liberty to inſpect Mr. SCOTT's Plough, and take a Drawing or Model of it, for the purpoſe of making them, by applying to the proper Officer, at the Society's Houſe, any day, Sundays and Wedneſdays excepted, between the hours of ten and two.

There

There remains now only again to repeat, that the ingenious, of both ſexes, are invited to ſubmit their works and their inventions to the inſpection of the Society, from whom they will receive every attention and encouragement their merit may entitle them to, and thereby ſecure to themſelves not only honour and profit, in the preſent inſtance, but have alſo the pleaſing conſciouſneſs that their names will ſtand recorded to poſterity, among thoſe who have contributed to the increaſe of the Arts, the Manufactures, and the Commerce of their Country; from whence alone the intereſt, the riches, and the ſubſtantial and permanent glory of the Kingdom, can ariſe.

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ERRATUM.

For Mr. Alexander Anderſon, page 324, *read*
Alexander Anderſon, M.D. F.R.S. Ed.

PREMIUMS

OFFERED BY THE

SOCIETY

INSTITUTED AT LONDON,

FOR THE ENCOURAGEMENT OF

ARTS, MANUFACTURES,

AND

COMMERCE,

IN

THE YEAR M.DCC.XCVIII.

TO THE

PUBLIC.

ADELPHI-BUILDINGS,
April 13, 1798.

THE chief objects of the attention of the Society for the encouragement of Arts, Manufactures, and Commerce, in the application of their Rewards, are, ingenuity in the ſeveral branches of the POLITE and LIBERAL ARTS, uſeful Diſcoveries and Improvements in AGRICULTURE, MANUFACTURES, MECHANICKS, and CHEMISTRY, or the laying open any ſuch to the Public; and, in general, all ſuch uſeful Inventions, Diſcoveries, or Improvements (though not mentioned in the Book of Premiums), as may appear to have a tendency to the advantage of Trade and Commerce. The Society therefore, in purſuance of their plan, propoſe to beſtow the following Premiums.

Premiums for Planting and Husbandry.

Class 1. ACORNS. For having set, between the first of October, 1797, and the first of April, 1798, the greatest quantity of land, not less than ten acres, with Acorns, with or without seeds, cuttings, or plants of other trees, at the option of the Candidate; and for effectually fencing and preserving the same, in order to raise timber; the GOLD MEDAL.

2. For the second greatest quantity of land, not less than five acres, set agreeably to the above conditions, the SILVER MEDAL.

CERTIFICATES of setting agreeably to the above conditions, and that there are not fewer than three hundred young Oaks on each acre, to be delivered to the Society on or before the first Tuesday in November, 1798.

3, 4. The same premiums are extended one year further.

CERTI-

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1799.

5, 6. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1800.

7, 8. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1801.

9. RAISING OAKS. To the perſon who ſhall have raiſed, ſince the year 1794, the greateſt number of Oaks, not fewer than five thouſand, either from young plants or acorns, in order to ſecure a ſucceſſion of oak timber in this kingdom; the GOLD MEDAL.

10. For the next greateſt number, not fewer than three thouſand, the SILVER MEDAL.

CERTIFICATES that there were on the land, at leaſt the number of young Oak-trees required, in a thriving condition, two years after the planting, with an account of the methods purſued in making and managing the plantation, to be produced to the Society on or before the firſt Tueſday in January, 1799.

11, 12. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in January, 1800.

13, 14. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in January, 1801.

15. ASCERTAINING THE BEST METHOD OF RAISING OAKS. To the perſon who ſhall aſcertain in the beſt manner, by actual experiments, the comparative merits of the different modes of raiſing

ſing Oaks for timber, either from acorns ſet on land properly grubbed and tilled; from acorns ſown at random among buſhes, fern, or other cover; or from young plants, previouſly raiſed in nurſeries, and tranſplanted; regard being had to the expence, growth, and other reſpective advantages of the ſeveral methods; the GOLD MEDAL.

The ACCOUNTS and proper CERTIFICATES to be produced to the Society on or before the firſt Tueſday in November, 1798.

16. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in November, 1799.

17. OAK TIMBER IN COMPASS FORMS. To the perſon who ſhall aſcertain, by actual experiments, the beſt method of training young Oaks, ſo as to form Compaſs Timber for Ship-building, the GOLD MEDAL, or FIFTY GUINEAS.

CERTIFICATES of the number of Oak-plants, not fewer than one hundred, that have been trained; and that they promiſe, in the opinion of perſons experienced in ſhip-building, to anſwer the purpoſe intended; to be delivered to the Society on or before the laſt Tueſday in December, 1805.

It is required that with the Certificates there be ſent particular accounts of the age of the trees, when they were bugun to be trained, and the methods purſued in training them.

Should any perſon have already engaged in training Oaks for the above purpoſe, any information on the ſubject will be thankfully received by the Society.

18. CHESNUTS. For having ſown or ſet, between the firſt of October, 1797, and the firſt of April, 1798, the greateſt quantity of dry loamy land, not leſs than ſix acres, with Spaniſh Cheſnuts, with or without ſeeds, cuttings, or plants of other

trees

trees adapted to ſuch ſoil, at the option of the Candidate; and for effectually fencing and preſerving the ſame, in order to raiſe timber; the GOLD MEDAL.

19. For the ſecond greateſt quantity, not leſs than four acres, the SILVER MEDAL.

CERTIFICATES of ſowing or ſetting agreeably to the above conditions, and that there are not fewer than three hundred Cheſnut plants, in a thriving ſtate, on eaeh acre, to be delivered to the Society on or before the firſt Tueſday in November, 1798.

20, 21. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the firſt Tueſday in November, 1799.

22, 23. The ſame premiums are extended one year further.

CER-

CERTIFICATES to be delivered on or before the firſt Tueſday in November, 1800.

24, 25. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the firſt Tueſday in November, 1801.

26. ELM. For having planted the greateſt number of the Engliſh Elm, not leſs than eight thouſand, between the twenty-fourth of June, 1796, and the twenty-fourth of June, 1797; and for the having effectually fenced and preſerved the ſame, in order to raiſe timber; the GOLD MEDAL.

27. For the ſecond greateſt number, not leſs than five thouſand, the SILVER MEDAL.

CERTIFICATES of the having planted agreeably to the above conditions, that the plants were in a healthy and thriving ſtate

two

two years at leaſt after making the plantation, and ſpecifying the diſtance of the plants, to be delivered to the Society on or before the firſt Tueſday in April, 1799.

28, 29. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in April, 1800.

30, 31. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in April, 1801.

32, 33. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in April, 1802.

34. LARCH. For having planted out between the twenty-fourth of June, 1795, and the twenty-fourth of June, 1796, the greateſt

greateſt number of Larch-trees, not fewer than five thouſand; and for having effectually fenced and preſerved the ſame, in order to raiſe timber; the GOLD MEDAL.

35. For the next greateſt number, not fewer than three thouſand, the SILVER MEDAL.

CERTIFICATES of the number of plants, that they were in a healthy and thriving ſtate two years at leaſt after they were planted out, with a general account of the methods uſed in making the plantation, to be delivered to the Society on or before the laſt Tueſday in December, 1798.

36, 37. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1799.

38, 39. The ſame premiums are extended one year further.

CER-

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1800.

40, 41. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1801.

42, 43. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1802.

N. B. The Larch-trees may be either planted, mixed with other trees, or by themſelves, as may beſt ſuit the convenience of the planter.

44. SILVER FIR. For having planted out, between the twenty-fourth of June, 1794, and the twenty-fourth of June, 1795, in a mixed plantation of foreſt-trees, or ſeparate, according to the option of the Candidate, the greateſt number of Silver Firs,

Firs, not fewer than two thouſand; and for having effectually fenced and preſerved the ſame, in order to raiſe timber; the GOLD MEDAL.

45. For the next greateſt number, not fewer than one thouſand, the SILVER MEDAL.

CERTIFICATES of the number of plants, that they were in a healthy and thriving ſtate two years at leaſt after they were planted out, with a general account of the methods uſed in making the plantation, to be delivered to the Society on or before the laſt Tueſday in December, 1798.

46, 47. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1799.

48, 49. The ſame premiums are extended one year further.

CER-

CERTIFICATES to be produced on or before the laſt Tueſday in December, 1800.

50. OSIERS. To the perſon who ſhall have planted, between the firſt of October, 1797, and the firſt of May, 1798, the greateſt quantity of land, not leſs than five acres, with thoſe kinds of Willows, commonly known by the names of Oſier, Spaniard, New-kind, or French, fit for the purpoſe of baſket-makers, not fewer than twelve thouſand plants on each acre; the GOLD MEDAL, or THIRTY GUINEAS.

51. For the ſecond greateſt quantity of land, not leſs than three acres, the SILVER MEDAL, or TEN GUINEAS.

CERTIFICATES of the planting, and that the plants were in a thriving ſtate five months at leaſt after the planting, to be produced to the Society on or before the laſt Tueſday in November, 1798.

52, 53. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the laſt Tueſday in November, 1799.

54. ALDER. For having planted, in the year 1795, the greateſt number of Alders, not leſs than three thouſand, the GOLD MEDAL.

CERTIFICATES of the number of plants, and that they were in a thriving ſtate two years at leaſt after being planted, to be delivered to the Society on or before the laſt Tueſday in December, 1798.

55. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1799.

56. The ſame premium is extended on year further.

CER-

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1800.

57. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1801.

58. ASH. For having ſown or ſet, in the year 1795, the greateſt quantity of land, not leſs than ſix acres, with Aſh for timber, with or without ſeeds, cuttings, or plants of ſuch other trees as are adapted to the ſoil; the GOLD MEDAL.

59. For the next greateſt quantity, not leſs than four acres, the SILVER MEDAL.

CERTIFICATES of the ſowing or ſetting agreeably to the above conditions; that there are not fewer than one hundred Aſh plants on each acre, in a thriving and

healthy condition, two years at leaſt after the ſowing or ſetting, with a general account of the methods uſed in making the plantation; to be delivered to the Society on or before the laſt Tueſday in December, 1798.

60, 61. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1799.

62, 63. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1800.

64, 65. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1801.

66,

66, 67. The ſame premiums are extended one year further.

CERTIFICATES to be delivered on or before the laſt Tueſday in December, 1802.

68. TIMBER TREES. To the perſon who ſhall have encloſed, planted, or ſown, the greateſt number of acres, not leſs than ten, with the beſt ſorts of Foreſt-trees, adapted to the ſoil, for timber, between the firſt of October, 1794, and the firſt of May, 1796; the GOLD MEDAL.

An account of the methods uſed in making the plantations, and of the nature of the ſoil, together with proper CERTIFICATES that the trees were in a thriving and healthy ſtate two years at leaſt after making the plantation, to be delivered to the Society on or before the firſt Tueſday in November, 1798.

69. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in November, 1799.

70. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to to be delivered to the Society on or before the firſt Tueſday in November, 1800.

71. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in November, 1801.

N. B. With the above Foreſt-trees, the ſeeds, cuttings, or plants, of ſuch other trees as are adapted to the ſoil, and proper for underwood, may or may not be intermixed.

72. PLANTING ORCHARDS. To the perſon who ſhall plant an Orchard after the month of Auguſt in the year 1796, in

in the moſt judicious manner, not leſs than four acres; the GOLD MEDAL, or FIFTY GUINEAS.

73. For the next in merit, the SILVER MEDAL, or THIRTY GUINEAS.

The proof of the value of the improvement of the Orchard ſhall depend on the clear product of the greateſt quantity of fine marketable fruit, to be produced during three ſucceſſive years after the year 1812, and ſold at any public market in England or Wales. Each perſon who propoſes to become a Candidate for theſe Premiums muſt ſend an account of the number of trees, their culture, pruning, and every circumſtance which can in the leaſt throw any light on the ſubject; which information will be regiſtered, with a view to form a ſyſtem of rational culture.

74. And that Gentlemen may be induced to come forward, and make and preſerve ſuch plantations,—The perſon who can produce an ORCHARD which, at the end

of three years after planting, ſhall ſhew the greateſt promiſe of ſucceſs, ſhall be entitled to the GOLD MEDAL, or THIRTY GUINEAS.

The merits of the two firſt-mentioned Premiums being to be aſcertained by the fruit; the merit of the third Premium muſt be aſcertained by the judicious number of trees planted, the ſtraitneſs, clearneſs, and freedom of growth of the ſeveral trees; and that all the young branches run free, and at due diſtance from each other, without any galling or canker.

CERTIFICATES of the forming the Orchard, the ſoil and aſpect of the plantation, the ſale and product of the fruit for which the claims for the Premiums, Claſſes 72 and 73, are intended to be made, muſt be delivered to the Society on or before the firſt Tueſday in November, 1815; and the Certificate in claim of the Premium, Claſs 74, muſt be delivered to the Society on or before the firſt Tueſday in November, 1799.

N. B.

N. B. However expert the Orchardiſt may be in general information and attention, much will depend on ſoil, expoſure, culture, and an eaſy communication to convey the fruit to market; for every field, however valuable in other reſpects, may not be proper for an Orchard.

Any wood the Orchardiſt may chooſe to raiſe for ſhelter to ſuch plantation, is not to be meaſured as part of the Orchard, as the wood will more than ſupport its own expence.

75, 76, 77. The foregoing Premiums for Orchards, from Claſs 72 to Claſs 74, incluſive, are extended one year further. The claims for the Premiums, Claſs 72 and 73, to be delivered to the Society on or before the firſt Tueſday in November, 1816; and the Certificate in claim of the Premium, Claſs 74, muſt be delivered on or before the firſt Tueſday in November, 1800.

*** *The Candidates for planting all kinds of Trees are to certify, that the reſpective*

Plantations are properly fenced and ſecured, and particularly to ſtate the condition the plants were in at the time of ſigning ſuch Certificates.

Any information which the Candidates for the foregoing Premiums may chooſe to communicate, relative to the methods made uſe of in forming the Plantation, or promoting the growth of the ſeveral Trees, or any other obſervations that may have occurred on the ſubject, will be thankfully received.

78. SECURING PLANTATIONS OF TIMBER-TREES. To the perſon who ſhall give to the Society the moſt ſatisfactory Account, founded on experience, of the moſt effectual and leaſt expenſive method of ſecuring young plantations of timber-trees, from Hares and Rabbits, as well as Sheep and larger cattle, which at the ſame time ſhall be leaſt ſubject to the depredations of wood-ſtealers; the SILVER MEDAL, or TWENTY GUINEAS.

The

The ACCOUNTS and CERTIFICATES of the efficacy of the method, to be produced to the Society on or before the first Tuesday in November, 1798.

79. The same premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the first Tuesday in November, 1799.

80. PREVENTING THE BLIGHT ON FRUIT-TREES. To the person who shall discover to the Society the best and most effectual method of preventing the Blight on Fruit-trees, superior to any hitherto known or practised, and verified by actual and comparative experiments; the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS, with proper CERTIFICATES, to be delivered to the Society on or before the second Tuesday in November, 1798.

81.

81. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered on or before the ſecond Tueſday in November, 1799.

82. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered on or before the ſecond Tueſday in November, 1800.

83. TAKING OFF THE ILL EFFECTS OF BLIGHTS. To the perſon who ſhall diſcover to the Society the beſt and moſt effectual method of taking off the ill effects of Blights on Fruit-trees, ſuperior to any hitherto known or practiſed, and verified by actual and comparative experiments; the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS and CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in February, 1799.

84.

84. COMPARATIVE CULTURE OF WHEAT. For the beſt ſet of experiments, made on not leſs than eight acres, four of which to be ſown broad-caſt, and four drilled, to aſcertain whether it is moſt advantageous to cultivate Wheat by ſowing it in the common broad-caſt way, or by drilling it in equidiſtant rows, hoeing the intervals; the GOLD MEDAL, or the SILVER MEDAL and TWENTY GUINEAS.

It is required that an account of the expence attending each mode of culture, with proper CERTIFICATES of the nature and condition of the land on which the experiments are made, together with an account of the produce of the Corn, be produced to the Society on or before the firſt Tueſday in February, 1799.

85. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered on or before the firſt Tueſday in February, 1800.

86.

86. COMPARATIVE CULTURE OF WHEAT. For the beſt ſet of experiments, made on not leſs than eight acres of land, four of which to be ſown broad-caſt, and four dibbled, to aſcertain whether it is moſt advantageous to cultivate Wheat by ſowing it in the common broad-caſt way, or by dibbling it in equidiſtant rows, hoeing the intervals; the GOLD MEDAL, or the SILVER MEDAL and THIRTY GUINEAS.

It is required that an account of the expence attending each mode of culture, with proper Certificates of the nature and condition of the land on which the experiments are made, together with an account of the produce of the Corn, be produced to the Society on or before the firſt Tueſday in February, 1799.

87. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered on or before the firſt Tueſday in February, 1800.

88.

88. BEANS AND WHEAT. To the perſon who ſhall have planted or drilled, between the firſt of December, 1796, and the firſt of April, 1797, the greateſt quantity of land, not leſs than ten acres, with Beans, and ſhall have ſown the ſame land with Wheat in the ſame year 1797; TWENTY GUINEAS.

It is required that an account of the ſort and quantity of Beans, the time of planting or drilling, and of reaping or mowing them, the produce per acre threſhed, the application of the ſtraw, the expence of planting or drilling, hand or horſe hoeing, the diſtance of the rows, and the quality of the ſoil, together with CERTIFICATES of the number of acres, and that the land was actually ſown with Wheat in the year 1797, be produced on or before the firſt Tueſday in November, 1798.

N. B. The Society have been informed, that Beans may be drilled or planted ſo early as the month of December, from whence may be derived the advantage of an early harveſt;

harveſt; in which caſe the ſtraw will be far more valuable than that from a later planting or drilling.

89. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the firſt Tueſday in November, 1799.

90. TURNEPS. For the beſt account of experiments made on at leaſt ſix acres of land, to determine the comparative advantage of the drill or broad-caſt method in the cultivation of Turneps; the GOLD MEDAL, or the SILVER MEDAL and TEN GUINEAS.

The ACCOUNTS, with proper CERTIFICATES, to be delivered on or before the third Tueſday in March, 1799.

It is required that one half of the land be drilled, and the other half ſown broad-caſt.

91.

91. VEGETABLE FOOD. For the beſt account, confirmed by experiments, of the Vegetable Food (Cabbages and Turneps excepted), growing in the months of March and April, that will moſt increaſe the milk in Mares, Cows, and Ewes, at that ſeaſon; provided ſuch food can be cultivated at an expence that will admit of its being applied to the above purpoſes; the GOLD MEDAL, or the SILVER MEDAL and TEN GUINEAS.

CERTIFICATES to be produced on or before the ſecond Tueſday in November, 1798.

92. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the ſecond Tueſday in November, 1799.

93. POTATOES FOR FEEDING CATTLE AND SHEEP. To the perſon who, in the year 1797, ſhall have cultivated the greateſt quantity of land, not leſs

leſs than four acres, with Potatoes, for the purpoſe of feeding Cattle and Sheep; the GOLD MEDAL, or THIRTY GUINEAS.

CERTIFICATES, with ſatisfactory Accounts of the expence and manner of cultivating the Potatoes, and the application of them to the above purpoſes only, and the ſucceſs that has attended the uſe of them, to be delivered to the Society on or before the ſecond Tueſday in November, 1798.

N. B. Should any Gentleman have already cultivated Potatoes for the purpoſes mentioned in the above advertiſement, any information from him on the ſubject will be thankfully received by the Society.

94. CULTIVATING ROOTS AND HERBAGE FOR FEEDING SHEEP AND BLACK CATTLE. For the moſt ſatisfactory experiments, made between Michaelmas, 1797, and the firſt of May, 1798, in order to aſcertain which of the following plants

plants can be cultivated and houſed or otherwiſe ſecured for winter-fodder, to the greateſt advantage, viz.

Turnep-rooted Cabbage,	Carrots,
Turnep Cabbage,	Parſneps,
Turneps,	Potatoes;

the GOLD MEDAL.

The ACCOUNTS, with proper Certificates, to be produced on or before the firſt Tueſday in November, 1798.

It is required that the above roots be taken off the land by the laſt day of October, 1797; that a crop of Wheat may be ſown in the ſame ground, and the particulars of the ſowing and planting, taking up, produce, preſerving, and application to the feeding Sheep and Black Cattle, be ſpecified. The comparative experiments muſt be made between two or more of any of the above-mentioned plants, and not leſs than one acre be cultivated with each particular kind of plant.

N. B. Great advantage will ariſe to the Farmer occupying land in the neighbourhood of extenſive commons, from the conveniency of keeping large flocks of Sheep, and herds of Cattle, if the difficulty of ſupporting them through the winter was obviated by a due knowledge of this practice.

95. PARSNEPS. To the perſon, who, in the year 1798, ſhall cultivate the greateſt quantity of land, not leſs than five acres, with Parſneps, for the ſole purpoſe of feeding Cattle or Sheep; the GOLD MEDAL, or THIRTY GUINEAS.

CERTIFICATES of the quantity of land ſo cultivated, with a particular account of the nature and quality of the ſoil and produce, and alſo of the condition of the Cattle or Sheep fed with the Parſneps, and the advantages reſulting from the practice, to be produced to the Society on or before the ſecond Tueſday in February, 1799.

96. The ſame premium is extended one year further.

The

The CERTIFICATES and ACCOUNTS to be produced on or before the ſecond Tueſday in February, 1800.

97. MAKING HAY IN WET WEATHER. To the perſon who ſhall diſcover to the Society the beſt and cheapeſt method, ſuperior to any hitherto practiſed, of making Hay in wet weather, the GOLD MEDAL, or THIRTY GUINEAS.

A full account of the method employed, and of the expence attending the proceſs, with not leſs than fifty-ſix pounds of the Hay; and Certificates that at leaſt the produce of ſix acres of land has been made according to the method deſcribed, and that the whole is of equal quality with the ſamples; to be produced on or before the firſt Tueſday in January, 1799.

98. HARVESTING CORN IN WET WEATHER. To the perſon who ſhall diſcover to the Society the beſt and cheapeſt method, ſuperior to any hitherto

practiſed, of harveſting Corn in Wet Weather, the GOLD MEDAL, or THIRTY GUINEAS.

A full account of the method employed, and of the expence attending the proceſs, with not leſs than two Sheaves of the Corn, and Certificates that at leaſt the produce of four acres has been harveſted according to the method deſcribed, and that the whole is of equal quality with the ſamples, to be produced on or before the firſt Tueſday in January, 1799.

99. CULTIVATING THE TRUE RHUBARB. For having raiſed, before the end of the year 1798, the greateſt number of plants, not leſs than two thouſand, of Rheum Palmatum, or true Rhubarb, the GOLD MEDAL, or THIRTY GUINEAS.

CERTIFICATES of the number of plants, that they ſtand at leaſt four feet aſunder, that they have been in a thriving ſtate during the preceding ſummer, with an account of

of the ſoil, culture, and aſpect, to be produced on or before the ſecond Tueſday in February, 1799.

100. The ſame premium is extended one year further.

The CERTIFICATES to be produced on or before the ſecond Tueſday in February, 1800.

101. ASCERTAINING THE COMPONENT PARTS OF ARABLE LAND. To the perſon who ſhall produce to the Society the moſt ſatisfactory ſet of experiments, to aſcertain the due proportion of the ſeveral component parts of Arable Land, in one or more Counties in Great Britain, by an accurate analyſis of it; and who, having made a like analyſis of ſome poor land, ſhall, by comparing the component parts of each, and thereby aſcertaining the deficiencies in the poor ſoil, improve a quantity of it, not leſs than one acre, by the addition of ſuch parts as the former ex-

periments ſhall have diſcovered to be wanting therein, and therefore probably the cauſe of its ſterility; the GOLD MEDAL, or FIFTY GUINEAS.

It is required that the manurings, ploughings, and crops of the improved land, be the ſame after the improvement as before; and that a minute account of the produce in each ſtate, of the weather, and of the various influencing circumſtances, together with the method made uſe of in analyſing the ſoils, be produced, with proper CERTIFICATES, and the chemical reſults of the analyſis, which are to remain the property of the Society, on or before the laſt Tueſday in November, 1798.

It is expected that a quantity, not leſs than ſix pounds, of the rich, of the poor, and of the improved ſoils, be produced, with the Certificates.

N. B. Among the methods or proceſſes made uſe of by Chemiſts, and called DRY or MOIST, the latter only appears adapted

to

to the aſcertaining the reſpective proportions of the component parts of Arable earth. Dr. Shaw, in his Chemical Lectures; Dr. Home, in his Principles of Agriculture; Dr. George Fordyce, in his Elements of Agriculture; and Sir Torbern Bergman, in his "Diſſertation ſur les Terres Géoponiques;" have treated on theſe ſubjects.

102. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the laſt Tueſday in November, 1799.

103. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the laſt Tueſday in November, 1800.

104. IMPROVING LAND LYING WASTE. For the moſt ſatisfactory Ac-

count of the beſt method of improving any of the following ſoils, being land lying waſte or uncultivated, viz. Clay, Gravel, Sand, Chalk, Moor or Peat-earth and Bog; verified by experiments on not leſs than fifty acres of land; the GOLD MEDAL, or the SILVER MEDAL and TWENTY GUINEAS.

105. For the next greateſt quantity of land, not leſs than twenty-five acres, the SILVER MEDAL and TEN GUINEAS.

To be produced, with proper CERTIFICATES, on or before the ſecond Tueſday in December, 1798.

The ſoil, manner of improvement, expence, and product, together with an account of the uſes the improved land has been applied to, are required to be fully explained.

106, 107. The ſame premiums are extended one year further.

The

The ACCOUNTS to be produced on or before the ſecond Tueſday in December, 1799.

108, 109. The ſame premiums are extended one year further.

The ACCOUNTS to be produced on or before the ſecond Tueſday in December, 1800.

110. MANURES. For the moſt ſatisfactory ſet of experiments, to aſcertain the comparative advantages of the following Manures, uſed as Top-dreſſings, on Graſs or Corn Land, viz. Soot, Coal-Aſhes, Wood-Aſhes, Lime, Gypſum, Night-ſoil; the GOLD MEDAL, or the SILVER MEDAL and TWENTY GUINEAS.

It is required that the above experiments be made between two or more of the above-mentioned Manures, and that not leſs than two acres of land be dreſſed with each Manure. An account of the nature of the

ſoil,

foil, quantity and expence of the Manure, and crops, with CERTIFICATES, to be produced on or before the laſt Tueſday in February, 1799.

111. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the laſt Tueſday in February, 1800.

112. IMPROVING WASTE MOORS. For the improvement of the greateſt number of acres of Waſte Moor-Land, not leſs than one hundred, the GOLD MEDAL.

It is required that the land before improvement be abſolutely uncultivated, and in a great meaſure uſeleſs; that in its improved ſtate it be incloſed, cultivated, and divided into fields, ſufficient for the uſe and occupation of a tenant.

CERTIFICATES of the number of acres, of the quality of the Moor ſo improved, of the

the mode and expence of the improvement, the ſtate it is in as to the proportion of graſs to arable, and the average value thereof, to be produced on or before the firſt Tueſday in February, 1799.

113. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in February, 1800.

114. The ſame premium is extended one year further,

CERTIFICATES to be produced on or before the firſt Tueſday in February, 1801.

115. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in February, 1802.

116. GAINING LAND FROM THE SEA. To the perſon who ſhall produce to the

the Society an account of the beſt method, verified by actual experiment, of gaining Land from the Sea, not leſs than twenty acres, on the coaſt of England or Wales, the GOLD MEDAL.

CERTIFICATES of the quantity of Land, and that the experiments were begun after the firſt of January, 1793, to be produced to the Society on or before the firſt Tueſday in October, 1798.

N. B. The Society have been credibly informed, that land has been gained on the coaſt of Holland, by fixing rows of whiſps of ſtraw upright in the ſand, at about a foot diſtant from each other, or by fixing ſtakes at proper diſtances from each other, and wattling ſtraw-bands between them.

117. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in October, 1799.

118. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in October, 1800.

119. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in October, 1801.

120. MACHINE FOR DIBBLING WHEAT. To the perſon who ſhall invent the beſt Machine, to anſwer the purpoſe of Dibbling Wheat, by which the holes for receiving the grain may be made at equal diſtances and proper depths, the grain regularly delivered therein, and effectually covered; the SILVER MEDAL, or TWENTY GUINEAS.

The MACHINE, with CERTIFICATES that at leaſt three acres have been dibbled by it, to be produced to the Society on or before the ſecond Tueſday in January, 1799.

Simplicity

Simplicity and cheapneſs in the conſtruction will be conſidered as principal parts of its merit.

121. MACHINE TO ANSWER THE PURPOSE OF REAPING OR MOWING CORN. For inventing a Machine to anſwer the purpoſe of mowing or reaping Wheat, Rye, Barley, Oats, or Beans, by which it may be done more expeditiouſly and cheaper than by any method now practiſed, provided it does not ſhed the corn or pulſe more than the methods in common practice, and that it lays the ſtraw in ſuch a manner as that it may be eaſily gathered up for binding; the SILVER MEDAL, or TEN GUINEAS.

The MACHINE, with CERTIFICATES that at leaſt three acres have been cut by it, to be produced to the Society on or before the ſecond Tueſday in December, 1798. Simplicity and cheapneſs in the conſtruction will be conſidered as principal parts of its merit.

122.

122. DESTROYING THE GRUB OF THE COCKCHAFER. To the perſon who ſhall diſcover to the Society an effectual method, verified by repeated and ſatisfactory trials, of deſtroying the Grub of the Cockchafer, or of preventing or checking the deſtructive effects which always attend Corn, Peas, Beans, and Turneps, when attacked by thoſe inſects; the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS, with proper CERTIFICATES, to be produced on or before the firſt Tueſday in January, 1799.

123. DESTROYING THE WIRE-WORM. To the perſon who ſhall diſcover to the Society an effectual method, verified by repeated and ſatisfactory trials, of deſtroying the Inſect called the Wire-worm, or of preventing or checking the deſtructive effects which always attend Corn, Beans, Peaſe, or Pulſe, when attacked by thoſe inſects; the GOLD MEDAL, or THIRTY GUINEAS.

The

The ACCOUNTS, with proper CERTIFICATES, to be produced to the Society on or before the first Tuesday in January, 1799.

124. DESTROYING THE FLY ON HOPS, AND CATERPILLARS ON FRUIT-TREES AND CULINARY PLANTS. To the person who shall discover to the Society an easy and efficacious method of destroying the Fly on Hops, and Caterpillars on Fruit-trees and culinary plants, superior to any hitherto known or practised, the GOLD MEDAL, or THIRTY GUINEAS.

ACCOUNTS and CERTIFICATES, that the method has been effectually practised, on not less than six acres of Hop-ground, or an Orchard or Garden of not less than two acres, to be delivered to the Society on or before the first Tuesday in February, 1799.

125. CURE OF THE ROT IN SHEEP. To the person who shall discover

cover to the Society the beſt and moſt effectual method of preventing or curing the diſeaſe called the Rot in Sheep, verified by repeated and ſatisfactory experiments, the GOLD MEDAL, or THIRTY GUINEAS.

It is expected that the Candidates furniſh accurate accounts of the nature, ſymptoms, and cure of the diſeaſe, together with the imputed cauſe thereof, and the actual or probable means of prevention, which, with proper CERTIFICATES, muſt be delivered to the Society on or before the firſt Tueſday in February, 1799.

126. PREVENTING AND CURING THE ILL EFFECTS OF THE FLY ON SHEEP. To the perſon who ſhall diſcover to the Society the moſt effectual method of preventing and curing the ill effects of the Fly on Sheep, the SILVER MEDAL, or TWENTY GUINEAS.

It is required that the method be aſcertained by repeated experiments, and that a CERTIFICATE of its efficacy be delivered

to the Society on or before the firſt Tueſday in December, 1798.

127. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in December, 1799.

128. PROTECTING SHEEP. To the perſon who, in the year 1798, ſhall protect the greateſt number of Sheep, not fewer than five hundred, in bad ſeaſons, by houſing them in hovels or ſheds; and give the moſt ſatisfactory account, verified by experiment, of the advantages ariſing from the practice of defending Sheep from the inclemency of the weather, by ſuch hovels, or ſheds; TWENTY GUINEAS.

A particular account of the experiments made, with the advantages ariſing therefrom, together with the expence, and CERTIFICATES of its utility, to be produced to the Society

Society on or before the firſt Tueſday in March, 1799.

129. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be delivered on or before the firſt Tueſday in March, 1800.

N. B. It is at the option of the Candidates to have their hovels fixed, or moveable; and it is required, that the CERTIFICATES ſhall ſpecify the length of time the Sheep were under cover, and the manner in which they were maintained during that time; together with the general method of managing them in the ſaid hovels.

Premiums for Diſcoveries and Improvements in Chemiſtry, Dying, and Mineralogy.

130. BARILLA. For the greateſt quantity of Merchantable Barilla, not leſs than half a ton, made from Spaniſh Kali, or any other plant raiſed in Great Britain; the GOLD MEDAL, or THIRTY GUINEAS.

A ſample, of not leſs than twenty-eight pounds, with a CERTIFICATE that half a ton has been made, to be produced on or before the firſt Tueſday in January, 1799.

131. PRESERVING SEEDS OF VEGETABLES. For the beſt method of preſerving the ſeeds of Plants, in a ſtate fit for vegetation, a longer time than has hitherto been practiſed, ſuch method being ſuperior to any known to the public, and verified by ſufficient trial; to be communicated to the Society on or before the firſt Tueſday in December, 1798; the GOLD MEDAL, or THIRTY GUINEAS.

132. The ſame premium is extended one year further; the ACCOUNTS to be produced on or before the firſt Tueſday in December, 1799.

133. METHOD OF SEPARATING THE SACCHARINE SUBSTANCE OF TREACLE IN A SOLID FORM. To the perſon who ſhall diſcover to the Society the beſt method of ſeparating the Saccharine Subſtance of Treacle in a ſolid form, at ſuch an expence as will render it advantageous to the public; the GOLD MEDAL, or FIFTY GUINEAS.

A quantity of the Saccharine Subſtance, ſo ſeparated, in a ſolid form, not leſs than thirty pounds weight, with an account of the proceſs, and CERTIFICATES that not leſs than one hundred weight has been prepared, to be produced to the Society on or before the firſt Tueſday in February, 1799.

134. PRESERVING FRESH-WATER SWEET. To the perſon who ſhall

produce to the Society the beſt account, verified by ſatisfactory trials, of an efficacious method of preſerving Freſh-water ſweet during long voyages; the GOLD MEDAL, or FIFTY GUINEAS.

ACCOUNTS, and full deſcriptions of the methods made uſe of, in order that it may be known that nothing injurious enters therein, to be produced to the Society, with at leaſt thirty gallons of Water ſo preſerved, and proper CERTIFICATES, on or before the laſt Tueſday in December, 1798.

135. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the laſt Tueſday in December, 1799.

136. PURIFYING BRACKISH WATER. To the perſon who ſhall diſcover to the Society the beſt and cheapeſt method, verified by actual experiment, of Purifying

or

or reducing Brackiſh Water, which frequently ariſes from New Wells, made in particular places, to a natural ſweetneſs, fit for the uſe of families and for the purpoſe of cattle; the SILVER MEDAL, and FIFTEEN GUINEAS.

Satisfactory CERTIFICATES that ſuch Brackiſh Water has been rendered perfectly ſweet, and uſed by the family to which ſuch Well may belong at leaſt three months afterwards, with an account of the method made uſe of in purifying the ſame, to be delivered to the Society on or before the ſecond Tueſday in February, 1799.

137. DESTROYING SMOKE. For the beſt account, aſcertained by proper experiments, of a cheap method of deſtroying or burning the Smoke of Fires belonging to Steam-Engines, Furnaces employed in calcining or ſmelting Metals, or other large works, in order to prevent annoyance to the neighbourhood; to be produced on or

before the first Tuesday in January, 1799; the GOLD MEDAL, or THIRTY GUINEAS.

138. The same premium is extended one year further.

The ACCOUNTS to be produced on or before the first Tuesday in January, 1800.

139. CONDENSING SMOKE. To the person who shall invent the best method by which the Smoke of Steam-Engines, Brewhouses, Sugar-houses, or Furnaces, may be advantageously condensed and collected in the form of Tar, or some other useful material; the GOLD MEDAL, or FIFTY GUINEAS.

The ACCOUNTS, with proper CERTIFICATES of the method having been successfully employed, and specimens of the materials produced, to be delivered to the Society on or before the first Tuesday in December, 1798.

140.

140. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in December, 1799.

141. CANDLES FROM RESIN OR OTHER SUBSTANCE. To the perſon who ſhall diſcover to the Society the beſt method of making Candles of Reſin, or any other ſubſtance, fit for common uſe, at a price much inferior to thoſe made of Tallow only; the GOLD MEDAL, or THIRTY GUINEAS.

Six pounds at leaſt of the Candles ſo prepared, with an ACCOUNT of the proceſs, to be delivered to the Society on or before the firſt Tueſday in December, 1798.

142. REFINING WHALE OR SEAL OIL. For diſcloſing to the Society an effectual method of purifying Whale or Seal Oil from the glutinous matter that encruſts

cruſts the wicks of lamps, and extinguiſhes the light, though fully ſupplied with oil; the GOLD MEDAL, or FIFTY GUINEAS.

It is required that the whole of the proceſs be fully and fairly diſcloſed, in order that ſatisfactory experiments may be made by the Society to determine the validity of the claim; and CERTIFICATES that not leſs than twenty gallons have been purified according to the proceſs delivered in, together with two gallons of the oil, in its unpurified ſtate, and two gallons ſo refined, be produced to the Society on or before the ſecond Tueſday in February, 1799.

143. The ſame premium is extended one year further.

CERTIFICATES and SAMPLES to be produced on or before the ſecond Tueſday in February, 1800.

144. CLEARING FEATHERS FROM THEIR ANIMAL OIL. To the perſon who ſhall diſcover to the Society the beſt

beſt and moſt expeditious method, ſuperior to any hitherto practiſed, of clearing Gooſe-feathers from their offenſive Animal Oil, for the uſe of Upholders, in making beds, cuſhions, &c. the GOLD MEDAL, or FORTY GUINEAS.

A quantity of ſuch Feathers, unſtripped, and ſo cleared, not leſs than forty pounds weight, with a full account of the proceſs, to be produced to the Society on or before the firſt Tueſday in February, 1799.

145. SUBSTITUTE FOR, OR PREPARATION OF, YEAST. For diſcovering to the Society an effectual Subſtitute for Yeaſt, or preparation of Yeaſt, which, after being kept ſix months, ſhall be fit for fermenting liquors, and raiſing bread; the GOLD MEDAL, or THIRTY GUINEAS.

Specimens of the Subſtitute, or of the Preparation of Yeaſt, ſufficient for trials, together with a paper ſealed up, and containing an account of the compoſition of the

Subſtitute

Subſtitute, or method of preparing the Yeaſt, to be produced on or before the laſt Tueſday in November, 1798.

146. PROOF SPIRIT. To the Diſtiller who in the year 1798 ſhall make the greateſt quantity, not leſs than one hundred gallons, of a clean marketable Spirit, from articles not the food of man or cattle, equal in ſtrength or quality to the Proof Spirit now in uſe, and at a rate not higher than the ſpirit produced from corn or melaſſes; the GOLD MEDAL, or FIFTY GUINEAS.

Ten gallons of the Spirit, together with proper CERTIFICATES, and a full account of the expence and mode of making it, to be produced to the Society on or before the firſt Tueſday in January, 1799.

147. PRESERVING SALTED PROVISIONS FROM BECOMING RANCID OR RUSTY. To the perſon who ſhall diſcover to the Society the beſt, cheapeſt, and moſt efficacious method of preſerving

ving Salted Proviſions from growing rancid or ruſty; the GOLD MEDAL, or THIRTY GUINEAS.

A full deſcription of the method, with proper CERTIFICATES that it has been found, on repeated trials, to anſwer the purpoſe intended, to be produced to the Society on or before the firſt Tueſday in February, 1799.

148. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced to the Society on or before the firſt Tueſday in February, 1800.

149. INCREASING STEAM. To the perſon who ſhall diſcover to the Society a method, verified by actual experiments, of increaſing the quantity or the force of Steam, in Steam-Engines, with leſs fuel than is uſually employed, provided that in general the whole amount of the expences, in uſing Steam-Engines, may be conſiderably leſſened;

leſſened; the GOLD MEDAL, or THIRTY GUINEAS.

To be communicated to the Society on or before the firſt Tueſday in January, 1799.

N. B. As it is well known there are methods of preventing the ebullition of liquids by the addition of particular matters in the boiling, it is ſubmitted to the conſideration of the ingenious, whether, by the addition of ſome matters, or by ſome mechanical operations, the boiling and evaporation may not be increaſed.

150. PREVENTING THE DRY-ROT IN TIMBER. To the perſon who ſhall diſcover to the Society the cauſe of the Dry-Rot in Timber, and diſcloſe a certain method of prevention, ſuperior to any hitherto known; the GOLD MEDAL, or THIRTY GUINEAS.

The ACCOUNTS of the cauſe, and method of prevention, confirmed by repeated experiments, to be produced to the Society on or

or before the ſecond Tueſday in December, 1798.

151. The ſame premium is extended one year further.

The ACCOUNTS to be produced on or before the ſecond Tueſday in December, 1799.

152. FINE BAR-IRON. To the perſon, in Great Britain, who ſhall make the greateſt quantity of Bar-Iron, not leſs than ten tons, with Coak, from Coak Pigs, equal in quality to the beſt Iron imported from Sweden or Ruſſia, and as fit for converting into Steel; the GOLD MEDAL.

SAMPLES, not leſs than one hundred weight, with CERTIFICATES that the whole quantity is of equal quality, to be produced to the Society on or before the firſt Tueſday in January, 1799.

153. The ſame premium is extended one year further.

SAMPLES and CERTIFICATES to be delivered on or before the firſt Tueſday in January, 1800.

154.

154. METHOD OF PREPARING WHITE LEAD, WHICH SHALL NOT BE PREJUDICIAL. To the perſon who ſhall diſcover to the Society a method of preparing White Lead, in a manner that ſhall not be prejudicial to the health of the Workmen employed either in making or uſing it, and will anſwer all the purpoſes for which White Lead is at preſent uſed; the GOLD MEDAL, or FIFTY GUINEAS.

A quantity of the White Lead ſo prepared, with an account of the proceſs made uſe of, and CERTIFICATES that not leſs than one ton has been manufactured in the ſame manner, to be produced to the Society on or before the ſecond Tueſday in February, 1799.

155. SUBSTITUTE FOR THE BASIS OF PAINT. To the perſon who ſhall produce to the Society the beſt Subſtitute, ſuperior to any hitherto known, for the Baſis of Paint, equally proper for the purpoſe

purpoſe as the White Lead now employed; ſuch ſubſtitute not to be of a noxious quality, and which may be afforded at a price not materially higher than that of White Lead; the GOLD MEDAL, or ONE HUNDRED GUINEAS.

A quantity of the Subſtitute, not leſs than fifty pounds weight, with an ACCOUNT of the proceſs uſed in preparing it, and CERTIFICATES that at leaſt one hundred weight has been manufactured, to be produced to the Society on or before the ſecond Tueſday in November, 1798.

156. The ſame premium is extended one year further.

CERTIFICATES and ACCOUNTS to be produced on or before the ſecond Tueſday in November, 1799.

157. RED PIGMENT. To the perſon who ſhall diſcover to the Society a full and ſatisfactory proceſs for preparing a red Pigment,

ment, fit for uſe, in oil or water, equal in tone and brilliancy to the beſt Carmines and Lakes now known or in uſe, and perfectly durable; the GOLD MEDAL, or THIRTY GUINEAS.

One pound weight of ſuch Colour, and a full diſcloſure of its preparation, to be produced to the Society on or before the firſt Tueſday in February, 1799.

N. B. It is not required that the Colour ſo to be produced ſhould reſiſt the action of fire or chemical applications, but remain unaltered by the common expoſure to ſtrong light, damps, and noiſome vapours.

158. REFINING BLOCK TIN. To the perſon who ſhall diſcover to the Society the beſt method of purifying or refining *Block Tin*, in ſuch a manner as to render it fit for the finer purpoſes to which *Grain Tin* is now ſolely applied, and at an expence that ſhall not render it higher in price than *Grain Tin*; the GOLD MEDAL, or FIFTY GUINEAS.

CERTIFICATES that not leſs than three tons have been refined or purified, with a full detail of the proceſs, and a quantity, not leſs than one hundred weight, of the Tin ſo refined, to be produced to the Society on or before the firſt Tueſday in November, 1798.

159. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in November, 1799.

160. GLAZING EARTHEN WARE WITHOUT LEAD. To the perſon who ſhall diſcover to the Society the cheapeſt, ſafeſt, moſt durable, and moſt eaſily fuſible Compoſition, fit for the purpoſe of glazing the ordinary kinds of Earthen Ware, without any preparation of Lead, and equal to any hitherto in uſe; the GOLD MEDAL, or THIRTY GUINEAS.

SPECIMENS of the Ware ſo glazed, with proper CERTIFICATES of its having ſucceeded, and a SAMPLE of the materials made uſe of, to be produced to the Society on or before the firſt Tueſday in February, 1799.

161. BLACK DYE ON COTTON. To the perſon who ſhall invent and produce to the Society a Black Dye on Cotton Yarn, ſuperior to any hitherto known or in uſe; the GOLD MEDAL, or THIRTY GUINEAS.

A full ACCOUNT of the proceſs, with CERTIFICATES that the Cotton thus dyed ſtands waſhing with ſoap, and a SAMPLE of the Yarn ſo dyed, not leſs than five pounds weight, to be produced to the Society on or before the firſt Tueſday in February, 1799.

162. PRESERVING IRON FROM RUST. To the perſon who ſhall invent and diſcover to the Society, a cheap compoſition, which ſhall effectually preſerve Wrought

Wrought Iron from Ruſt, the GOLD MEDAL, or FIFTY GUINEAS.

A full deſcription of the method of preparing the compoſition, with CERTIFICATES that it has ſtood at leaſt two years unimpaired, and expoſed to the atmoſphere during the whole time, to be produced to the Society, with ten pounds weight of the compoſition, on or before the firſt Tueſday in January, 1799.

163. The ſame premium is extended one year further.

The deſcription and CERTIFICATES to be produced to the Society on or before the firſt Tueſday in January, 1800.

164. The ſame premiums are extended one year further.

The deſcription and CERTIFICATES to be produced to the Society on or before the firſt Tueſday in January, 1801.

165. OPIUM. To the perſon who, in the year 1798, ſhall prepare the greateſt

quantity, not leſs than twenty pounds weight, of Opium, from Poppies grown in Great Britain, and equal in quality to the beſt foreign Opium, the GOLD MEDAL, or FIFTY GUINEAS.

166. For the next greateſt quantity, not leſs than ten pounds weight, the SILVER MEDAL, or TWENTY GUINEAS.

SAMPLES of the Opium, not leſs than five pounds weight, with proper CERTIFICATES that the whole is of the ſame quality, to be produced to the Society, with a particular account of the method of cultivating the Poppies, and preparing the Opium, on or before the laſt Tueſday in February, 1799.

167, 168. The ſame premiums are extended one year further.

The SAMPLES, CERTIFICATES, and ACCOUNTS, to be produced to the Society on or before the laſt Tueſday in February, 1800.

Premiums

Premiums for promoting the Polite Arts.

169. HONORARY PREMIUMS FOR DRAWINGS. For the beſt Drawing of any kind, made with Water-Colours, Crayons, Chalk, Black Lead, Pen, Indian Ink, or Biſter, by young Gentlemen under the age of twenty-one, ſons or grandſons of Peers, or Peereſſes in their own right, of Great Britain or Ireland, to be produced on or before the firſt Tueſday in March, 1799, the HONORARY MEDAL of the Society IN GOLD.

170. The ſame IN SILVER for the next in merit.

171, 172. The ſame premiums will be given, on the like conditions, to young Ladies, daughters or grand-daughters of Peers, or Peereſſes in their own right, of Great Britain or Ireland.

173. HONORARY PREMIUMS FOR DRAWINGS. For the beſt Drawing of any kind, made with Water-colours, Crayons, Chalk, Black Lead, Pen, Indian Ink, or Biſter, by young Gentlemen under the age of twenty-one; to be produced on or before the firſt Tueſday in March, 1799; the GOLD MEDAL.

174. For the next in merit, the SILVER MEDAL.

175, 176. The ſame premiums will be given for Drawings by young Ladies.

N. B. As the foregoing Honorary Premiums are intended only for ſuch of the Nobility and Gentry as may hereafter become patrons or patroneſſes of the Arts; perſons profeſſing any branch of the Polite Arts, or any buſineſs dependent on the Arts of Deſign, or the ſons or daughters of ſuch perſons, will not be admitted Candidates in theſe Claſſes.

The

The following Premium (Claſs 181*) is offered in conformity to the Will of the late John Stock, of Hampſtead, Eſq.*

177. DRAWING. For the beſt Drawing, in Indian Ink, not leſs than eighteen inches high, of the Statue of the late Joſhua Ward, Eſq. in the Great-Room of the Society, to be produced on or before the third Tueſday in February, 1799, a SILVER MEDALLION, with the following engraved inſcription: *The Premium given by the Society, for the Encouragement of Arts, Manufactures, and Commerce, in conformity to the Will of John Stock, of Hampſtead, Eſq.*

The Drawing to be left with the Society as their property.

N. B. Such perſons as propoſe to become Candidates for this premium will be admitted by the Regiſter, any day (Sundays or Wedneſdays excepted), between the hours of ten and two.

178.

178. DRAWINGS OF OUTLINES. For the beſt Outline, after an original group or caſt, in plaſter, of Human Figures, by perſons of either ſex, under the age of ſixteen, the principal figure not leſs than twelve inches; to be produced on or before the third Tueſday in February, 1799; the greater SILVER PALLET.

179. For the next in merit, the leſſer SILVER PALLET.

N. B. Theſe drawings are to be made on Paper, with Chalk, Black Lead, Indian Ink, or Biſter; and the original either to be produced to the Society, or to be referred to for their examination.

180. DRAWINGS OF LANDSCAPES. For the beſt Drawing of a Landſcape after nature, by perſons of either ſex, under twenty-one years of age, to be produced on or before the third Tueſday in February, 1799, the greater SILVER PALLET.

181. For the next in merit, the leſſer SILVER PALLET.

Each Candidate muſt mention, on the front of the Drawing, from whence the View was taken; and the Drawings muſt be made with Chalk, Pen, Indian Ink, Water-Colours, or Biſter.

182. HISTORICAL DRAWINGS. For the beſt Hiſtorical Drawing, being an original compoſition, of five or more Human Figures; the height of the principal figure not leſs than eight inches; to be made with Crayons, Chalk, Black Lead, Pen, Indian Ink, Water-Colours, or Biſter, and to be produced on or before the third Tueſday in February, 1799; the GOLD PALLET.

183. For the next in merit, the greater SILVER PALLET.

184. SURVEYS OF COUNTIES. To the perſon who, in the year 1798, ſhall complete and publiſh an accurate Survey of any

any one County in England or Wales, on a ſcale of not leſs than one inch to a mile, for which rewards have not already been given by the Society; the GOLD MEDAL, or FIFTY GUINEAS.

CERTIFICATES of the accuracy of the Survey, and that it was begun after the firſt of June, 1794, together with the Map, to be produced on or before the laſt Tueſday in January, 1799.

The Map to which the premium ſhall be adjudged, to remain the property of the Society.

N. B. The Society are already in poſſeſſion of Surveys of the following Counties, viz. Bedford, Cheſhire, Cornwall, Cumberland, Derbyſhire, Devonſhire, Dorſetſhire, Durham, Hampſhire, Herefordſhire, Hertfordſhire, Huntingdonſhire, Leiceſterſhire, Northamptonſhire, North Wales (large and ſmall), Nottinghamſhire, Oxfordſhire, Somerſetſhire, Staffordſhire, Suffolk, Surrey, Suſſex, Weſtmoreland, and Worceſterſhire.

185.

185. The ſame premium is extended one year further.

The Survey to be begun after the firſt of June, 1795; and the Map to be produced on or before the laſt Tueſday in January, 1800.

186. The ſame premium is extended one year further.

The Survey to be begun after the firſt of June, 1796; and the Map to be produced on or before the laſt Tueſday in January, 1801.

187. NATURAL HISTORY. To the Author who ſhall publiſh, in the year 1798, the Natural Hiſtory of any County of England or Wales, the GOLD MEDAL, or FIFTY GUINEAS.

It is required that the ſeveral natural productions, whether animal, vegetable or mineral, peculiar to the County, or found therein, be carefully and ſpecifically arranged

ranged and deſcribed, in order that the Public may be enabled to judge what Arts or Manufactures are moſt likely to ſucceed in ſuch County.

The Work to be delivered to the Society on or before the laſt Tueſday in January, 1799.

188. The ſame premium is extended one year further.

The Work to be delivered to the Society on or before the laſt Tueſday in January, 1800.

189. The ſame premium is extended one year further.

The Work to be delivered to the Society on or before the laſt Tueſday in January, 1801.

CONDITIONS.

No perſon who has gained the firſt premium in any Claſs, will be admitted a Candidate

didate in a Claſs of an inferior age; and no Candidate ſhall receive more than one Premium in one year; nor will they who for two ſucceſſive years ſhall gain the firſt Premium in one Claſs, be ever again admitted as Candidates in that Claſs.

No perſon ſhall ever be admitted a Candidate in any Claſs, in which he has three times obtained the whole of the firſt Premium.

No Candidate ſhall ſend in more than one Performance in any one Claſs.

All the Claims which are produced each Seſſion before the Committee of Polite Arts (to which Premiums or Bounties are adjudged), are to remain with the Society till after the public diſtribution of Rewards in May.

No Claim for a Premium in the Polite Arts will be admitted, that has obtained, or has been produced in order to obtain, a Premium, Reward, or Gratification, from any other Society, or any Academy or School. All

All Performances that obtain Premiums in the Polite Arts, muſt be begun after the publication of ſuch Premiums.

Purpoſely to encourage real merit, and to prevent any attempts to impoſe on the Society, by producing drawings which ſhall have been made or retouched by any other perſon than the Candidate, the Society is reſolved, upon all occaſions, with reſpect to the ſucceſsful Candidates in Claſſes 177 to 182 incluſive, to prove their abilities, by requiring a ſpecimen made under the inſpection of the Committee of Polite Arts, in every inſtance where ſuch proof can be obtained.

It is required that all Candidates in the Polite Arts do ſignify, on their drawings, their age; and whether the performances are originals, or copies; and, if copies, whence they were taken.

Premiums for encouraging and improving Manufactures.

190. SILK. For the greateſt quantity of merchantable Silk, not leſs than ten pounds weight, produced by worms bred in England in the year 1798, the property of any one perſon; the GOLD MEDAL.

191. For the ſecond greateſt quantity, not leſs than five pounds weight; the SILVER MEDAL.

SPECIMENS of the SILK, not leſs than one pound, with CERTIFICATES that the whole is of equal quality, and produced in England, to be delivered to the Society on or before the firſt Tueſday in January, 1799.

192. MACHINE FOR CARDING SILK. For the beſt Machine, ſuperior to any now in uſe, for carding Waſte Silk equally well as by hand; to be produced, together with a ſpecimen of the Cardings,

on or before the firſt Tueſday in November, 1798; the GOLD MEDAL, or THIRTY GUINEAS.

193. CLOTH FROM HOP-STALKS OR BINES. To the perſon who ſhall produce to the Society the greateſt quantity, not leſs than thirty yards, of Cloth, at leaſt twenty-ſeven inches wide, made in Great Britain, of Hop-Stalks or Bines, and ſuperior to any hitherto manufactured in England of that material; the GOLD MEDAL, or THIRTY GUINEAS.

One pound of the Thread of which the Cloth is made, and thirty yards of the Cloth, together with proper CERTIFICATES that the whole is manufactured from Hop-Stalks or Bines, to be produced to the Society on or before the firſt Tueſday in December, 1798.

N. B. The Society are already in poſſeſſion of Cloth made in England from Hop-Stalks or Bines, which may be inſpected by application to the Regiſter.

194.

194. WICKS FOR CANDLES OR LAMPS. To the perſon who ſhall diſcover to the Society a method of manufacturing Hop-Stalks or Bines, or any other cheap material, the growth of Great Britain, ſo as to render them fit for the purpoſe of ſupplying the place of Cotton, for Wicks of Candles or Lamps; TWENTY GUINEAS.

SAMPLES, not leſs than five pounds weight, of the Wicks, ſo prepared, to be produced to the Society, with CERTIFICATES that the whole quantity is equal in quality to the Sample, on or before the ſecond Tueſday in January, 1799.

195. The ſame premium is extended one year further.

SAMPLES and CERTIFICATES to be produced on or before the ſecond Tueſday in January, 1800.

196. PAPER FROM RAW VEGETABLE SUBSTANCES. To the perſon

in Great Britain who ſhall make the greateſt quantity, not leſs than ten reams, of the beſt and moſt uſeful Paper, from Raw Vegetable Subſtances; TWENTY GUINEAS.

CERTIFICATES of the making ſuch Paper, and one ream of the Paper, to be produced on or before the firſt Tueſday in November, 1798.

N. B. The Society are in poſſeſſion of two volumes, containing a great variety of ſpecimens of Paper made from Raw Vegetables, viz. Thiſtles, Potatoe-Haum, Poplar, Hop-bines, &c. which volumes may be inſpected by any perſon, on application to the Regiſter.

197. TAKING PORPOISES. To the people in any boat or veſſel, who, in the year 1798, ſhall take the greateſt number of Porpoiſes, on the coaſt of Great Britain, by Gun-Harpoon, or any other method, not fewer than thirty, for the purpoſe of extracting oil from them; THIRTY POUNDS.

CERTI-

CERTIFICATES of the number, ſigned by the perſons to whom they have been ſold or delivered for the purpoſe of extracting the oil, to be produced to the Society on or before the laſt Tueſday in January, 1799.

198. OIL FROM PORPOISES. To the perſon who ſhall manufacture the greateſt quantity of Oil from Porpoiſes taken on the coaſt of Great Britain, in the year 1798, not leſs than thirty tons; THIRTY POUNDS.

199. For the next greateſt quantity, not leſs than fifteen tons; FIFTEEN POUNDS.

CERTIFICATES of the Oil having been made from Porpoiſes actually caught on the coaſt of Great Britain, and two gallons of the Oil, as a Sample, to be produced to the Society on or before the laſt Tueſday in February, 1799.

Premiums for Inventions in Mechanicks.

200. TRANSIT INSTRUMENT. To the perſon who ſhall invent and produce to the Society a cheap and portable Tranſit Inſtrument, which may eaſily be converted into a Zenith Sector, capable of being accurately and expeditiouſly adjuſted for the purpoſe of finding the Latitudes and Longitudes of places, and ſuperior to any portable Tranſit Inſtrument now in uſe; the GOLD MEDAL, or FORTY GUINEAS.

To be produced on or before the laſt Tueſday in January, 1799.

201. TAKING WHALES BY THE GUN-HARPOON. To the perſon who, in the year 1798, ſhall ſtrike the greateſt number of Whales, not fewer than three, with the Gun-Harpoon; TEN GUINEAS.

Proper CERTIFICATES of the ſtriking ſuch Whales, and that they were actually taken

taken in the year 1798, ſigned by the Maſter, or by the Mate when the Claim is made by the Maſter, to be produced to the Society on or before the laſt Tueſday in December, 1798.

202. DRIVING BOLTS INTO SHIPS. To the perſon who ſhall invent and produce to the Society a Model, ſhewing a method of driving Bolts into Ships, particularly thoſe of Copper, without ſplitting the head or bending them, with more diſpatch, in all directions, and tighter than by any means hitherto known or in uſe; the GOLD MEDAL, or FORTY GUINEAS.

The Model, with CERTIFICATES that a Machine on the ſame conſtruction has been uſed to advantage, to be produced to the Society on or before the firſt Tueſday in February, 1799.

203. PARISH OR FAMILY MILL. To the perſon who ſhall invent and produce to the Society, the beſt-conſtructed Mill for

grinding corn for the uſe of private families, or pariſh poor; the conſtruction to be ſuch as to render the working of the Mill eaſy and expeditious, and ſuperior to any hitherto in uſe; the GOLD MEDAL, or FORTY GUINEAS.

The Mill, and CERTIFICATES of its having been uſed to good effect, to be produced to the Society on or before the firſt Tueſday in February, 1799.

N. B. Cheapneſs and ſimplicity will be conſidered as eſſential parts of its merit.

204. MACHINE FOR RAISING COALS, ORE, &c. &c. To the perſon who ſhall invent a Machine for raiſing Coals, Ore, &c. from Mines, which ſhall produce the effect at a leſs expence than thoſe already known or in uſe; the GOLD MEDAL, or FIFTY GUINEAS.

A Model of the Machine, made on a ſcale of not leſs than one inch to a foot, with a CERTIFICATE that a Machine at large

large on the ſame conſtruction has been advantageouſly uſed, to be produced to the Society on or before the ſecond Tueſday in February, 1799.

205. MACHINE FOR RAISING WATER. To the perſon who ſhall invent a Machine, on a better, cheaper, and more ſimple conſtruction than any hitherto known or in uſe, for raiſing Water out of Wells, &c. from a depth not leſs than fifty feet; the GOLD MEDAL, or FORTY GUINEAS.

CERTIFICATES of the performance of the Machine, and a Model of it, on a ſcale of not leſs than one inch to a foot, to be produced to the Society on or before the firſt Tueſday in February, 1799.

206. BORING ROCKS IN ORDER TO BLAST THEM. To the perſon who ſhall diſcover to the Society a more cheap, ſimple, and expeditious Method than any hitherto known or in uſe, of Boring Rocks

in

in Mines, Shafts, Wells, &c. for the purpoſe of Blaſting them with Gunpowder; the GOLD MEDAL, or FORTY GUINEAS.

CERTIFICATES of the method having been practiſed with ſucceſs, with a full deſcription thereof, to be delivered to the Society on or before the firſt Tueſday in January, 1799.

207. *As the preſent method of cleanſing Chimneys is attended with great hardſhips, and ſometimes with fatal accidents to the children employed, and as the quantity of ſoot accumulated in Chimneys is frequently the occaſion of Fires, the Society propoſe to give the following Premium.*

CLEANSING CHIMNEYS. To the perſon who ſhall invent and produce to the Society, the moſt ſimple, cheap, and proper Apparatus, ſuperior to any hitherto known or in uſe, for cleanſing Chimneys from Soot, and obviating the neceſſity of children being employed within the flues, in the manner

manner now practiſed; the GOLD MEDAL, or FORTY GUINEAS.

The Apparatus, with CERTIFICATES of its having been uſed with proper effect, to be produced to the Society on or before the third Tueſday in February, 1799.

208. PREVENTING PASSENGERS IN CARRIAGES BEING INJURED WHEN THE HORSES HAVE TAKEN FRIGHT. To the perſon who ſhall invent and diſcover to the Society the beſt and moſt effectual method of preventing Paſſengers in Carriages being injured when the Horſes have taken fright; the GOLD MEDAL, or THIRTY GUINEAS.

CERTIFICATES that the Invention has been uſefully applied to at leaſt one Carriage, and may be advantageouſly applied to others, to be produced to the Society on or before the ſecond Tueſday in February, 1799.

209.

209. GUNPOWDER MILLS. To the perſon who, in the year 1798, ſhall invent and bring to perfection the moſt effectual method of ſo conducting the works of Gunpowder Mills, in the buſineſs of making Gunpowder, as to prevent the poſſibility of their being blown up and deſtroyed by exploſion; the GOLD MEDAL, or ONE HUNDRED GUINEAS.

CERTIFICATES and ACCOUNTS of the method having been put in practice in one or more Gunpowder Mills in this kingdom, and that it promiſes, in the opinion of the beſt judges concerned in ſuch works, to anſwer the purpoſe intended, to be produced to the Society on or before the firſt Tueſday in February, 1799.

210. The ſame premium is extended one year further.

CERTIFICATES and ACCOUNTS to be produced to the Society on or before the firſt Tueſday in February, 1800.

N. B.

N. B. As an encouragement to perſons to turn their thoughts to improvements of this nature, if any ſhould be made on the preſent method of conducting the buſineſs of Gunpowder-making, which fall ſhort of the total prevention of exploſion, and they are ſent to the Society, for the ſake of humanity, the papers ſo ſent in will receive due conſideration, and ſuch Bounty or Reward will be beſtowed thereon as they appear to merit.

211. MILL STONES. To the perſon who ſhall diſcover, in Great Britain, a Quarry of Stone fit for the purpoſes of Mill Stones for grinding Wheat, and equal in all reſpects to that Stone known by the name of FRENCH BURR; The GOLD MEDAL, or ONE HUNDRED POUNDS.

A pair of Mill Stones, at leaſt three feet eight inches diameter, with an account of the ſituation of the Quarry, and CERTIFICATES that not fewer than two pair of ſuch Mill Stones have been effectually uſed for grinding

grinding Wheat, to be produced to the Society on or before the firſt Tueſday in February, 1799.

212. The ſame premium is extended one year further.

The ACCOUNTS, SAMPLES, and CERTIFICATES, to be produced to the Society on or before the firſt Tueſday in February, 1800.

Pre-

Premiums offered for the advantage of the Britiſh Colonies.

213. NUTMEGS. For the greateſt quantity of Merchantable Nutmegs, not leſs than ten pounds weight, being the growth of his Majeſty's dominions in the Weſt Indies, or any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, and equal to thoſe imported from the Iſlands of the Eaſt Indies; the GOLD MEDAL, or ONE HUNDRED GUINEAS.

Satisfactory CERTIFICATES, from the Governor or Commander in Chief, of the place of growth, with an account of the number of trees, their age, nearly the quantity of fruit on each tree, and the manner of culture, to be produced on or before the firſt Tueſday in December, 1798.

214. The ſame premium is extended one year further.

CERTI-

CERTIFICATES to be produced on or before the ſecond Tueſday in December, 1799.

215. CINNAMON. For importing into the port of London, in the year 1798, the greateſt quantity, not leſs than twenty pounds weight, of Cinnamon, being the growth of ſome of the Iſlands in the Weſt-Indies belonging to the Crown of Great Britain, or any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, and equal in goodneſs to the Cinnamon brought from the Eaſt-Indies; the GOLD MEDAL, or FIFTY GUINEAS.

SAMPLES, not leſs than two pounds weight, with CERTIFICATES that the whole quantity is equal in goodneſs; together with ſatisfactory CERTIFICATES, ſigned by the Governor, or Commander in Chief, of the place of growth, with an account of the number of trees growing on the ſpot, their age, and the manner of cul-

ture;

ture; to be produced to the Society on or before the firſt Tueſday in January, 1799.

216. CLOVES. For importing into the port of London, in the year 1798, the greateſt quantity of Cloves, not leſs than twenty pounds weight, being of the growth of ſome of the Iſlands of the Weſt-Indies, ſubject to the Crown of Great Britain, or any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, and equal in goodneſs to the Cloves brought from the Eaſt-Indies; the GOLD MEDAL, or FIFTY GUINEAS.

SAMPLES, not leſs than two pounds weight, with CERTIFICATES that the whole quantity is equal in goodneſs, together with ſatisfactory CERTIFICATES, ſigned by the Governor, or Commander in Chief, of the place of growth, with an account of the number of trees growing on the ſpot, their age, and the manner of culture, to be produced to the Society

on or before the firſt Tueſday in January, 1799.

217. The ſame premium is extended one year further.

SAMPLES and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1800.

218. The ſame premium is extended one year further.

SAMPLES and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1801.

219. PLANTATIONS OF BREAD-FRUIT TREES. To the perſon who ſhall have raiſed in any of the Iſlands of the Weſt-Indies, ſubject to the Crown of Great Britain, or in any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, between the firſt of January, 1797, and the firſt of January, 1798,

1798, the greateſt number of Bread-fruit Trees, not fewer than one hundred, and properly fenced and ſecured the ſame, in order to ſupply the Fruit to the Inhabitants; the GOLD MEDAL, or THIRTY GUINEAS.

Proper ACCOUNTS and CERTIFICATES, ſigned by the Governor or Commander in Chief, of the methods made uſe of in cultivating the Plants and ſecuring the Plantation, and that the Trees are in a growing and thriving ſtate at the time of ſigning ſuch Certificates, to be produced to the Society, with Samples of the Fruit, on or before the firſt Tueſday in January, 1799.

220. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1800.

221. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1801.

222. The ſame premium is extended one year further.

The ACCOUNTS and CERTIFICATES to be produced on or before the firſt Tueſday in January, 1802.

223. KALI FOR BARILLA. To the perſon who ſhall have cultivated, in the Bahama Iſlands, or any other part of his Majeſty's dominions in the Weſt Indies, or any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto, in the year 1795, the greateſt quantity of land, not leſs than two acres, with Spaniſh Kali, fit for the purpoſe of making Barilla; the GOLD MEDAL, or THIRTY GUINEAS.

224. For the next greateſt quantity, not leſs than one acre; the SILVER MEDAL, or FIFTEEN GUINEAS.

CERTI-

CERTIFICATES, ſigned by the Governor, or Commander in Chief for the time being, of the quantity of land ſo cultivated, and of the ſtate of the Plants at the time of ſigning ſuch Certificates, to be delivered to the Society, with Samples of the Kali, on or before the ſecond Tueſday in November, 1798.

225, 226. The ſame premiums are extended one year further.

CERTIFICATES to be produced on or before the ſecond Tueſday in November, 1799.

227, 228. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the ſecond Tueſday in November, 1800.

229. DESTROYING THE INSECT COMMONLY CALLED THE BORER. To the perſon who ſhall diſ-

cover to the Society an effectual method of deſtroying the Inſect commonly called the BORER, which has of late years been ſo deſtructive to the Sugar-Canes in the Weſt-India Iſlands, or in any of the Britiſh Settlements on the Coaſt of Africa, or the ſeveral Iſlands adjacent thereto; the GOLD MEDAL, or FIFTY GUINEAS.

The Diſcovery to be aſcertained by ſatisfactory CERTIFICATES, under the hand and ſeal of the Governor or Commander in Chief for the time being, and of ſome other reſpectable perſons, inhabitants of the Iſlands, or other place, in which the remedy has been ſucceſsfully applied; ſuch CERTIFICATES to be delivered to the Society on or before the firſt Tueſday in January, 1799.

230. The ſame premium is extended one year further.

CERTIFICATES to be delivered on or before the firſt Tueſday in January, 1800.

231.

231. BOTANIC GARDEN IN THE BAHAMA ISLANDS. To the perſon who, before the firſt of January, 1797, ſhall have ſet apart, and, at his own private expence, ſhall have properly fenced and cultivated, the greateſt quantity of ground, not leſs than five acres, in any of the Bahama Iſlands, as a Botanic Garden, for the purpoſe of making experiments in the culture of thoſe articles which are the peculiar production of the tropical climates, and which may tend to promote the commerce and manufactures of this country; the GOLD MEDAL, or ONE HUNDRED GUINEAS.

It is required that any perſon claiming the foregoing premium, ſhould produce to the Society, on or before the firſt Tueſday in January, 1799, a CERTIFICATE from the Governor or Commander in Chief of the Bahama Iſlands for the time being, of his having complied with the above requiſitions, and that the Garden is in a proper ſtate of culture at the time of ſigning ſuch Certificate.

232. The ſame premium is extended one year further.

CERTIFICATES to be produced on or before the firſt Tueſday in January, 1800.

Premiums

Premiums offered for the advantage of the Britiſh Settlements in the Eaſt Indies.

233. BHAUGULPORE COTTON. To the perſon who ſhall import into the port of London, in the year 1798, the greateſt quantity, not leſs than one ton, of the Bhaugulpore Cotton, from which clothes are made in imitation of nankeen, without dying; the GOLD MEDAL.

A quantity of the Cotton, not leſs than five pounds weight in the pod, and five pounds carded, to be produced to the Society, with proper CERTIFICATES, ſigned by the Secretary to the Board of Trade of Bengal, on or before the laſt Tueſday in February, 1799.

234. The ſame premium is extended one year further.

The

The SAMPLES and CERTIFICATES to be produced to the Society on or before the laſt Tueſday in February, 1800.

235. The ſame premium is extended one year further.

The SAMPLES and CERTIFICATES to be produced to the Society on or before the laſt Tueſday in February, 1801.

236. ANNATTO. To the perſon who, in the year 1798, ſhall import into the port of London, from any part of the Britiſh Settlements in the Eaſt Indies, the greateſt quantity of Annatto, not leſs than five hundred weight; the GOLD MEDAL.

A quantity of the Annatto, not leſs than ten pounds weight, to be produced to the Society, with proper CERTIFICATES, ſigned by the Secretary of the Board of Trade of the reſpective Settlement, that the Annatto is the produce of ſuch Settlement, on or before the laſt Tueſday in February, 1799.

237.

237. The ſame premium is extended one year further.

The SAMPLES and CERTIFICATES to be produced to the Society on or before the laſt Tueſday in February, 1800.

238. The ſame premium is extended one year further.

The SAMPLES and CERTIFICATES to be produced to the Society on or before the laſt Tueſday in February, 1801.

239. TRUE COCHINEAL. To the perſon who, in the year 1798, ſhall import into the port of London, from any part of the Britiſh Settlements in the Eaſt Indies, the greateſt quantity of True Cochineal, not leſs than five hundred weight; the GOLD MEDAL.

A quantity of the Cochineal, not leſs than ten pounds weight, with proper CERTIFICATES, ſigned by the Secretary of the Board of

of Trade of the reſpective Settlement, that the Cochineal is the produce of ſuch Settlement, to be produced to the Society on or before the laſt Tueſday in February, 1799.

240. The ſame premium is extended one year further.

The SAMPLES and CERTIFICATES to be produced on or before the laſt Tueſday in February, 1800.

Society's Office, Adelphi, June 1, 1798.

Ordered,

THAT THE SEVERAL CANDIDATES AND CLAIMANTS TO WHOM THE SOCIETY SHALL ADJUDGE PREMIUMS OR BOUNTIES, DO ATTEND AT THE SOCIETY'S OFFICE IN THE ADELPHI, ON THE LAST TUESDAY IN MAY, 1799, AT TWELVE O'CLOCK AT NOON, TO RECEIVE THE SAME; THAT DAY BEING APPOINTED BY THE SOCIETY FOR THE DISTRIBUTION OF THEIR REWARDS: AND BEFORE THAT TIME NO PREMIUM OR BOUNTY WILL BE DELIVERED, EXCEPTING TO THOSE WHO ARE OUT OF THE KINGDOM, OR PREVENTED BY UNAVOIDABLE ACCIDENTS.

IN CASES WHERE THE SOCIETY MAY THINK FIT TO ADMIT EXCUSES FOR NOT ATTENDING IN PERSON, DEPUTIES MAY BE SUBSTITUTED TO RECEIVE THE REWARDS, PROVIDED SUCH DEPUTIES ARE EITHER MEMBERS OF THE SOCIETY, OR THE SUPERIOR OFFICERS THEREOF.

GENERAL

GENERAL CONDITIONS.

NOTWITHSTANDING the Society reſerve to themſelves the power of giving, in all caſes, ſuch part only of any Premium as the performance ſhall be adjudged to deſerve, or of withholding the whole, if there be no merit; yet the Candidates may be aſſured the Society will always judge liberally of their ſeveral claims.

It is required that the matters for which Premiums are offered, be delivered in without names, or any intimation to whom they belong; that each particular thing be marked in what manner each Claimant thinks fit, ſuch Claimant ſending with it a paper ſealed up, having on the outſide a correſponding mark, and on the inſide the Claimant's name and addreſs: and all Candidates are to take notice, that no Claim for a Premium will be attended to, unleſs the conditions of the Advertiſement are fully complied with.

No

No Papers ſhall be opened, but ſuch as ſhall gain Premiums, unleſs where it appears to the Society abſolutely neceſſary for the determination of the Claim; all the reſt ſhall be returned unopened, with the Matters to which they belong, if enquired after by the Mark, within two years; after which time, if not demanded, they ſhall be publicly burnt, unopened, at ſome meeting of the Society.

All Models of Machines, which obtain Premiums or Bounties, ſhall be the property of the Society.

All the Premiums of this Society are deſigned for Great-Britain, unleſs expreſsly mentioned to the contrary.

The Claims ſhall be determined as ſoon as poſſible after the delivery of the ſpecimens.

No perſon ſhall receive any Premium, Bounty, or Encouragement from the Society, for any matter for which he has obtained, or propoſes to obtain, a patent.

A Candidate for a Premium, or a perſon applying for a bounty, being detected in any diſingenuous method to impoſe on the

the Society, ſhall forfeit ſuch Premium or Bounty, and be deemed incapable of obtaining any for the future.

The Performances which each year obtain Premiums or Bounties, are to remain with the Society until after the public diſtribution of Rewards.

No member of this Society ſhall be a Candidate for, or entitled to receive, any Premium, Bounty, or Reward whatſoever, except the Honorary Medal of the Society.

Where Certificates are required to be produced in claim of Premiums, they ſhould be expreſſed, as nearly as poſſible, in the words of the reſpective advertiſements, and ſhould not be from the Candidate (ſolely), but from ſome other perſon or perſons who have a poſitive knowledge of the facts certified.

Where Premiums or Bounties are obtained in conſequence of ſpecimens produced, the Society mean to retain ſuch part of thoſe ſpecimens as they may judge neceſſary, making a reaſonable allowance for the ſame.

No

No candidates ſhall be preſent at any meetings of the Society or Committees, or admitted at the Society's Rooms, after they have delivered in their Claims, until ſuch Claims are adjudged, unleſs ſummoned by the Committee.

N. B. Any information or advice that may forward the deſigns of this Society for the public good, will be received thankfully, and duly conſidered, if communicated by letter, addreſſed to the Society, and directed to Mr. More, the Secretary, at the Society's Office, in the Adelphi Buildings, London.

*** In case any person should be inclined to leave a sum of money to this Society, by will, the following form is offered for that purpose:

Item. I give and bequeath unto A. B. and C. D. the sum of upon condition and to the intent that they, or one of them, do pay the same to the Collector for the time being, of a Society in London, who now call themselves the Society for the Encouragement of Arts, Manufactures, and Commerce; which said sum of I will and desire may be paid out of my personal estate, and applied towards the carrying on the laudable designs of the Society.

By order of the Society,

SAMUEL MORE, Secretary.

PAPERS

IN

AGRICULTURE.

AGRICULTURE.

THE GOLD MEDAL, being the Premium offered for planting Larch, in the years 1794 and 1795, was this Seſſion adjudged to JOHN SNEYD, of Belmont, in Staffordſhire, Eſq. from whom the following Papers were received.

SIR,

HEREWITH I ſend you a Certificate of the Larches which I happened to have planted within the time mentioned in the advertiſement of the Society; they had been tranſplanted from the ſeed-bed, and afterwards from the nurſery, at proper intervals, and had all excellent roots; ſo that (excluſive of their preſent very flouriſhing appearance) I doubt not but they will do us all credit. Every one, I truſt, is yearly more

and more convinced how very profitable the cultivation of Larch muſt prove to the kingdom at large. The *method uſed in making* this plantation, was, planting with good roots, in large holes, well bedded in with ſoil of a light ſand and loam, in rough, heathy, and ſtony land, without any previous preparation of the land, as it wanted none. The ages of the trees are mentioned in the Certificate. It might have been better to have planted them out one year ſooner, had not great care been taken.

I am, dear Sir,

Your obedient and obliged
humble Servant,

J. SNEYD.

Belmont, Dec. 22, 1797.

Mr. MORE.

SIR,

THIS is to certify, that John Sneyd, Esq. did plant, in inclosures well fenced with good stone walls, at Belmont, Staffordshire, the following Larch-Trees, between June 1794, and June 1795, at proper distances, in a soil that suits their growth, and that they are now in a thriving and healthy condition.

6000, when planted out, were 4 years old,
5000, ditto 3 ditto.

WILLIAM CARLISLE,
Curate of Ipstones.

Ipstones, Dec. 21, 1797.

The Thanks of the Society were this Seſſion given to THOMAS DAVIS, Eſq. for the following Communication.

SIR,

HAVING had the honour of being elected a member of the Society for Encouragement of Arts, &c. and thinking it the duty of every member to communicate the reſult of any experiments he may have made, on thoſe ſubjects which are the particular objects of the Society, eſpecially ſuch experiments as require a long ſeries of years to aſcertain their effect, I flatter myſelf that the following account of Lord Bath's extenſive plantations at Longleat will not prove unacceptable, and in that hope I ſend them to you.

I am, SIR,
Your very obedient Servant,

THOMAS DAVIS,
Steward to the Marquis of Bath.

Longleat, Jan. 2, 1798.

Mr. MORE.

HAVING been for near thirty-five years in the ſervice of the Marquis of Bath, and, during the laſt twenty, having had the management of his extenſive woods and plantations, I have had full opportunity of obſerving the comparative profit of the different kinds of trees and underwood planted by his Lordſhip during that time; a period in which his Lordſhip has regularly planted on an average upwards of fifty thouſand trees a year, and in ſome years upwards of one hundred thouſand.

The land which his Lordſhip has planted, has been chiefly that tract of poor heathy land, at the foot of Wiltſhire Downs, near Warminſter, which divides the counties of Wilts and Somerſet.

The ſoil in general a black peat, of four or five inches thick, on a ſubſtratum of dry huſky white ſand, intermixed with ſmall ſtones of grit, but as firmly run together as if it had been in a ſtate of fuſion; the natural production, chiefly heath mixed with moſs, but in a weak ſtarve d ſta te.

In.

In ſome places the upper ſtratum varies to a tolerable ſandy loam, on a bed of yellow gravel, but thoſe parts are comparatively ſmall; in fact, ſuch land as to be almoſt incapable of improvement in any way but by planting.

The value of this land in its original ſtate, as part of a very extenſive common, was from one to four ſhillings per acre, per annum; and though his Lordſhip has in many inſtances expended double the value of the fee-ſimple of the land, in attempting by ploughing and liming ſome of the beſt parts of it, to bring it into cultivation, it has nevertheleſs ſo ſtrong a tendency to run back to its original ſtate of heath, that it ſets all agriculture at defiance.

Even lime, which is the only manure adapted to it, and which will enable it to produce crops of corn for three or four years after the firſt breaking up, loſes its effect in about ten years, and we have never found that a ſecond liming has produced any good effect.

In

In fact, thoſe parts which have been improved to the higheſt pitch, were, in my opinion, of leſs value as paſture land, fifteen years afterwards, than when covered with heath. Hardy kinds of ſtock would browſe the heath; but the graſs it now produces (chiefly the "aira or hair graſs") is ſo hard and wiry, that ſcarcely any thing will eat it.

This whole tract of land, notwithſtanding its poverty and preſent naked appearance, was once covered with wood: tradition ſays ſo; and the remains of a number of charcoal pits over every part of it, confirm it. But ſince the memory of man, there has been ſcarcely the appearance of a buſh remaining; when the great trees were cut, the little ones being deprived of their ſhelter, caught cold and died.

Lord Bath very judiciouſly covered it with wood again; but being well aware of the difficulty, indeed almoſt impoſſibility, of raiſing foreſt-trees upon it, unleſs they were ſheltered by Scotch Firs, he very wiſely

planted

planted a large proportion of the latter, and on all the pooreſt ſpots planted Scotch Firs alone.

I have the honour to ſubjoin an account of the profit he has derived from this plan; and have to add, that the *Beeches*, *Oaks*, &c. which were planted on the *beſt* ſpots, although nurſed up by Scotch Firs, will not be ſo valuable at *ſixty* years old, as the Scotch Firs on the *very worſt* land are at *thirty*.

I alſo take this opportunity to remove a doubt which has of late prevailed, too generally, that *Engliſh-grown Fir* timber is of *no uſe*. I have had more opportunities of uſing it, of all ages, from one hundred years growth downwards, than can fall to the lot of moſt men; and I can ſafely aſſert, from my own experience, that in all purpoſes to which Deal is applicable, I have found Engliſh-grown Fir equal in ſtrength and durability to any foreign Deal whatever. I allow that the Scotch Fir (although it is undoubtedly the real yellow Deal) is ſeldom of ſo delicate a grain as the foreign yellow

Deal,

Deal; but this is entirely occaſioned by the rapidity of its growth, and its having too much room to throw out large ſide branches. Lord Bath's Scotch Firs, which are known to have been planted in 1696, are from two to three feet in diameter; whereas the beſt Chriſtiana Deal, although evidently one hundred years old, is ſeldom above a foot in diameter; and its knots, which denote the ſize of its ſide branches, are ſmall and inconſiderable, therefore evidently appearing to have grown ſlow and cloſe together. We have a cart-houſe on Lord Bath's eſtate, which was built above eighty years ago out of ſmall Firs, which is now perfectly ſound and upright; and, for the laſt twenty years, all the carpenters of the country have uſed ſmall Firs for rafters, &c. with ſucceſs, and no timber is more ready ſale. The old Firs of 1696 are worth from 18d. to 21d. per foot, and thoſe of thirty years old, if tolerably ſtrait, yield a ſhilling. Oak trees of thirty years old are not worth above 9d. per foot, and beech not above 6d. In fact,

neither

neither of them can be called timber, or properly uſed as ſuch, at thirty years old.

1ſt, It ought alſo to be remarked, that although Fir timber is worth individually more, per tree, than Oak or Beech of *the ſame ſize*, it will nevertheleſs grow faſter and thicker together than any other trees. *Four Firs* will grow where *one Oak* or *Beech* will grow; for Firs are the better, and deciduous trees the worſe, for being crowded.

2dly, That a great deal of poor heathy ſhallow land, which will produce Scotch Firs in the greateſt perfection (and a great deal of the land planted by Lord Bath is of that deſcription), will not grow Oak or Beech *at all*, nor in fact any thing but Scotch Fir. Even Larch has failed univerſally on all thoſe ſpots where the upper ſtratum is peat.

Having lately had occaſion to cut ſome rides through ſome extenſive Plantations of Scotch Firs which were planted juſt thirty years ago, I meaſured the land, and the trees which were cut off it, very exactly,

and

and the following reſult ſhews that the profit of planting Scotch Firs has been full SEVEN PER CENT. COMPOUND INTEREST; whereas no plantation of deciduous trees, within my knowledge, has paid *five* per cent. *ſimple intereſt*. Indeed we uſually reckon, in valuing eſtates for ſale, that the common growth, even of Elm Timber, on its moſt favourite ſoils, is ſeldom equal to more than three or three and a half per cent. ſimple intereſt.

	£.	s.	d.
336 Scotch Firs, of 30 years old, cut upon a ſtatute acre, average meaſure 3 feet per tree, valued at only 10d. per foot, viz. 2s. 6d. per tree, amount to, *per* acre - -	42	0	0
At the time of planting, this land, then newly incloſed from a common, was not worth above 2s. per acre, per annum, which, at twenty-five years purchaſe for the fee-ſimple, amounts to	2	10	0
And the coſt of the trees and planting was not above	3	0	0
Total expence per acre, even ſuppoſing the land to be annihilated	£.5	10	0

£.5

£.5 : 10s. principal will increaſe, in thirty years, as follows :

at 5 per cent *ſimple* intereſt, to only £.	13	15	0
at 5 per cent *compound* intereſt, to	23	15	5
at 7 per cent *compound* intereſt, to	41	17	4

So that the Scotch Firs, which have increaſed £.5 : 10s. principal to £. 42 in thirty years, have paid upwards of 7 per cent. compound intereſt.

The

The SILVER MEDAL was this Seſſion voted to JOHN PHILLIPS, of Ely, Eſq. for the following Communications relative to the making Plantations of Oſiers, with regard both to the Seaſon for planting, and the Kinds adapted to each particular Soil.

SIR,

SINCE I had the honour of addreſſing the Society, I have made many experiments on different ſoils, with the view of aſcertaining which are moſt appropriate to Oſier Plantations; and which, of the almoſt infinite variety of Oſiers, are beſt adapted to the different ſoils; but as my Plantations are *chiefly* in the Fens, I have directed my attention more particularly to determine what ſpecies of Oſiers are moſt profitable in a Black Peat Soil, and which is the moſt advantageous way of planting them, and at what ſeaſon

of the year. It would have been of much public utility, if the baſket-makers had given a ſpecific deſcription of the beſt kind of Oſiers, the planting of which they wiſhed to be encouraged by premiums. The planters who intended becoming candidates for the rewards or honours of the Society, would in that caſe have procured thoſe only; much expence would have been ſaved to other gentlemen as well as myſelf, and a very conſiderable addition would have been made in our Plantations to the ſtock of the beſt Oſiers which are imported from abroad. As we have no generic or ſpecific terms, I will endeavour to give you a plain vulgar account of thoſe only which are ſelected by the moſt experienced planters in this neighbourhood. Oſier, in common parlance, is a word of very indeterminate ſignification: it is certainly a ſpecies of the Salix, but admitting of many varieties. I have endeavoured to reduce them to two Claſſes; firſt, thoſe which are ſo called by the growers and baſket-makers, diſtinguiſhable by their more blunt, mealy,

or

or downy leaf; and, ſecondly, thoſe that have a leaf more pointed, ſmooth, and green, reſembling that of a myrtle. Of the firſt claſs I have nine or ten varieties, all of which I ſhall eradicate, ſave one, viz. that which is called the Grey or Brindled Oſier. It has, in common with the others, the light-coloured leaf, but known by having its bark ſtreaked with red, or blood colour. It has not been long introduced into this country. It grows vigorouſly, is very hardy and tough, and bleaches well. All the others, of the firſt Claſs, delight in a wet ſoil, and will flouriſh even in the moſt barren kind of Peat; but they are coarſe and ſpongy, have a large pith, are brittle, and very periſhable: they are, however, uſed ſometimes for the ſtouter parts of large baſkets, and, unpeeled, for wine hampers. They grow quick and large, and a ſmall number will fill the ell bunch, by which all Oſiers are ſold; they are profitable to thoſe growers only who live near London, or whoſe plantations are contiguous to water-carriage. I have ſome acres of them; and were I to ſend

them there by waggon, which is our only mode of conveyance, they would not pay for the carriage. In time of war, when our intercourſe with France and Holland has been interrupted, where they grow better ſorts, they have been too much reſorted to, which has brought our baſkets into diſrepute, and leſſened the demand for them in foreign markets: this, together with the enhanced price of inſurance, accounts for the fact, that war makes Oſiers in this kingdom both dear and cheap; that is, dear at the commencement for want of importation, and cheap during its progreſs for want of exportation, after having been manufactured into baſkets, and other works to which they are applied. Of the ſecond Claſs are, 1. The Welch, both red and white; the red having the preference, and ſaid to have been brought originally from Wales; they form an almoſt eſſential part of every Plantation, as no other is fit to tie the bunches after the rods have been peeled and whitened. A bunch is formed by compreſſing the Oſiers in an iron hoop or band, of an ell in circumference;

ference; eighty bunches make a load, which four years back ſold at £.18; it is not now worth £.12. The beſt land will produce a load on an acre, but half a load is not a very bad crop on bad land. The expence of weeding, renewing, cutting, and peeling, is about £.5 per acre, when the buſineſs is well done; but they often go unweeded, when they are ſold at a low price, to the great decay of the Plantations. The Welch are alſo uſed to tie Reed Sheaves for thatch; they are ſo bitter, that cattle will not browſe them, unleſs driven to the extremity of hunger, and rats will not touch them, although they will deſtroy almoſt every kind of bandage. They were formerly grown for the coopers, to bind their hoops; but for this uſe they have long given way to the Hazel; they are very tough and durable, and would rank with the beſt ſorts for the uſe of baſket-makers, were they of a better colour when peeled.

2. The *Weſt Country* Spaniard. It is ſuppoſed to have been firſt introduced into the Weſt of England from Spain. It is very dif-

ferent from the *Spaniard*, which is a ſpecies of the larger Willow, and uſed for hedging-wood and hurdles. In the Iſle of Ely it was long in high eſtimation, until others were introduced, ſuppoſed to be ſuperior in ſome of their qualities: the bark is of a blueiſh grey colour; it grows ſtout and ſtately, and objects to no ſoil; the grower, however, urges againſt it what he thinks to be a ſtrong objection, viz. that it produces a ſmall crop. It bears, comparatively, only a few ſhoots on a head: this is certainly true; but what then? then it is not ſo profitable. I admit it, provided only an equal number be planted on an acre with thoſe that bear more ſhoots; but why ſhould the grower tie himſelf to plant an equal number of different ſorts on a given quantity of land? The nurſeryman is governed by no ſuch rule; and the farmer would become an object of pity, were he to ſow an equal quantity of every ſort of grain on an acre. The Society is bound to draw ſome line to prevent fraud, but the planter and farmer ſhould be guided only by the

burden

burden which the land is capable of bearing. My experience teaches, that an acre of land will carry, of this ſort, 14000 plants with more eaſe than 12000 of the beſt new kind.

3. I have not been able to learn where the *new kind* originated. It is well known every where; and although it muſt be much older in ſome counties than others, it is univerſally called by that name. There are, however, two ſorts; the other is called the *laſt* or *beſt new kind*. The bark of the former is of a light brown colour; that of the latter reſembles ruſty iron, with light longitudinal ſtripes: it is on that account called, by ſome perſons, the *Corderoy*. When the new kind was firſt introduced into the Iſle of Ely, it ſoon expelled moſt of thoſe of the firſt claſs: the few that are retained are uſed by the fiſhermen to make grigs, or twig tunnels, to catch eels and other fiſh: it ſtill maintains conſiderable reputation, but yields to the *laſt* new kind, which, beſides poſſeſſing moſt of the beſt properties, produces, on an average, at leaſt four ſhoots on the head more

than any other, and it will grow well in a dry mellow ſoil. As its ſhoots are more numerous, a greater ſpace ſhould be allotted to it, to draw nouriſhment from the earth, and to admit the rays of the ſun and circulation of air, ſo neceſſary to the growth of every plant: 11000 an acre is quite ſufficient on good land. But the beſt of all, conſidered in a public or political view, is

4. The FRENCH. Under this name the *Ground-Setter* is frequently ſold; and I am informed that it was ſo called, from its tendency, when neglected, to direct its ſhoots amongſt graſs and weeds parallel with and near the ground: it is of the ſame quality, colour, and appearance with the French, except that it has at the point a tuft formed of leaves curled inwards, which has the appearance of a ſmall withered roſe-bud. You will eaſily know both from all others, thus: draw them through your fiſt, from the top to the bottom, and the leaves will ſnap off with the brittleneſs of glaſs. The *Ground-Setter* grows very ſlowly, and is rejected by the

the planters on that account: the *French*, although more luxuriant, is alſo comparatively of ſlow growth; and it requires a great number to make up the bunch; but it is exceedingly taper, pliant, cloſe-grained, tough, and durable. The baſket-makers are more deſirous of it than any other, as it is beſt ſuited to make the ſmaller and finer baſkets, hats, fans, and other delicate articles. As it is much diſregarded by the planters in this kingdom, the baſket-makers, in times of peace, import vaſt quantities from France, the Auſtrian Netherlands (Belgium), and Holland, where it is cultivated with great ſucceſs. It is ſingular that it ſhould be imported cheaper than our planters can afford to grow it; the lands in France and Holland are much dearer than our fens. As an article of commerce, or as a raw material, it deſerves every encouragement that the public or individuals can give it; and if it be not ſo profitable to the grower, it is always of ready ſale.

I have

I have heard of another ſort, which is well ſpoken of, called the Red Kent Wlilow; but I am doubtful whether I am poſſeſſed of it or not: we have in this neighbourhood a very hard, tough Willow, of a reddiſh colour, of which hurdles, cribs, &c. are generally made. I planted it laſt year, in footſets, for the uſe of baſket-makers; but as the experiment is now only in proceſs, I can ſay nothing of its utility. I hope that thoſe who ſhall hereafter become candidates for the Premiums will give a deſcription of the ſorts planted by them; and of all others that are moſt eſteemed in their neighbourhood, perhaps ſome of your correſpondents, who may not be candidates, will favour the public with their knowledge on the ſubject.

As to the moſt advantageous way of planting, there is ſome difference of opinion. The different qualities and ſituations of ſoils are not always attended to; we are often deceived by a ſingle experiment; what may hit or fail one year, may be the reverſe the next; it requires a diverſified ſeries of expe-

riments

riments to enable us to form a right judgment. My plantations of the year 1794, made on banks of ſoil thrown out of the ditches on each ſide, and thoſe made on the level ground, flouriſhed equally well that year. It was difficult to judge of them the next year, for they had been more or leſs injured by the vaſt inundation of all the fens of the Iſle of Ely, and which was not removed in many places until late in the ſummer; but in the third year the advantage was manifeſtly in favour of thoſe which had been made on banks or elevated beds.

We have in this diſtrict from ten to fourteen inches of vegetating ſoil on the ſurface; immediately beneath it is a black or brown barren peat, of a looſe texture. In the drought of ſummer, when the moiſture is exhaled from the upper and more tenacious ſoil, the water inſtantly filters through the peat, and leaves the plants deſtitute of their beſt nouriſhment; but when the peat is thrown upon the ſolid earth, it will prevent the rays of the ſun from penetrating to the bottom;

bottom; and when the water falls in the ditches, the lower and more tenacious ſoil will retain a ſufficient quantity of it for the uſe of the plants. Care ſhould be taken to inſert the ſets through the peat into this lower ſtratum: they will ſtrike their radicles the firſt year into this more ſolid earth; but when the peat has been meliorated by the ſun and air, and been compreſſed, and become more adheſive, they will ſtrike higher in the ſtem, until the radicles or fibres approach the ſurface. It muſt be admitted, that this is an expenſive method, and leſſens the quantity of land to be planted upon. To remedy this inconvenience, I lay out my land in beds or barrows, of eighteen feet wide; ditches, of nine feet wide, are dug on each ſide; the top of which, fourteen inches thick, is laid on the barrows; turf for fuel is then dug in the ditches, the expence of which is about 1s. 8d. a thouſand; they are ſold for 2s. 6d.

The beds or barrows, now conſiſting of about two feet and a half thick of ſolid earth, above the ſurface of the peat, are planted

planted the following autumn, and produce good crops: when the water is ſufficiently low, I caſt upon theſe beds a fetid vegetable ſubſtance, vulgarly called Bear's Muck; it reſembles wet ſhag tobacco, and lies under the peat; it is extremely uſeful to the plants; and although it is, in its primitive ſtate, a perfect *caput mortuum*, when expoſed ſometime to the air it putrifies, affords mucilage, and becomes a good manure. In embanked diſtricts, ſubject to frequent and long inundations, two other advantages are obtained from theſe raiſed beds: the Oſiers are thereby removed farther from the reach of the ice, which on a thaw floats into the lower plantations, and does them much injury. When the waters are high, in the cutting or planting ſeaſon, the beds are more acceſſible than the level ground; but having had the command of the water laſt ſummer, by a mill or engine, I dug out the peat into turf, having firſt laid aſide the upper ſpit; the turf being removed, I ſhall return this ſpit into the ditch, and plant upon it; thus no ground will be loſt.

In the year 1796 I made an experiment on an acre of land of this quality; I ploughed one half of it, and the other half was dug with the ſpade, about fourteen inches deep; the ſod of that thickneſs was inverted by the ſpade. The plantation on the ploughed land was very weak, and failed in many places; that which followed the ſpade did better; but they are both ſo bad, that they muſt be renewed this year. On the former, the beſt land lay uppermoſt, which, when deprived, by the heat, of its moiſture, derived no aſſiſtance to ſupport the plants from the peat that lay underneath; on the latter, ſome of the beſt land was laid in the ground, but not deep enough to retain a ſufficient quantity of moiſture. The preceding year I planted in a piece contiguous, on banks as before deſcribed; and there the Oſiers do well.

I have a rich loam lying on a bed of potters clay: the ſituation is low, and expoſed to the water; French Oſiers were very ſcarce, and I could procure only a few hundreds laſt year; determined to eke them out

as

as far as I could, I laid them down in their whole length, and pegged them on the ground; they ſtruck good roots into the earth, and threw out abundant ſhoots.

This experiment, together with that of planting upon banks, will enable us to anſwer the queſtion often aſked, "Of what length ought the ſet to be?" It depends entirely upon the nature and ſituation of the land. There ſhould be ſo much of it in the ground as to enable it to procure moiſture, and ſo much of it out of the ground as to make it acceſſible in the cutting ſeaſon, where much weeding is not required: and where there are no floods, or where they ſubſide quickly, there ought to be very little of it out of the ground. The nouriſhment, in that caſe, will paſs immediately from the roots to the rods or ſhoots, without the burden of firſt ſupplying the head or ſtock.

Every experiment that I have made confirms my opinion, that the autumn, and not the ſpring, is the moſt proper ſeaſon for planting. Thoſe who think with me ſay, that

the

the fall of the leaf indicates the proper time to cut the ſets; it certainly is ſo in general; but the leaf of the Oſier, like that of the Oak and other trees, will ſometimes prolong its departure. The ſtagnation of the juices is the true criterion by which to judge, not on account of the ſet, but of the trunk, leſt, if you amputate it whilſt the juices are in circulation, it ſhould bleed to death. I have planted in the firſt week of October, and the ſets appeared to remain torpid for the remainder of the year; about Chriſtmas I took up ſeveral of them, and was much pleaſed to find that they had ſtruck root, although they had given no outward appearance of vegetation from the time of planting. It is probable that the earth retains a ſufficient portion of the ſummer heat until the autumn, to give life to plants at the root, when the atmoſphere may at that time be ſo cold as to diſcourage any exertions above-ground; and perhaps nature may be more vigorous when her operations are confined to one point.

When

When you plant in ſpring, the ſet ſeems (if I may ſpeak ſo figuratively) to have its attention diſtracted by two operations not very homogenous, the one upwards, the other downwards. It is impelled to ſhoot its radicles into the earth, to form its ſtability, and procure ſuſtenance; and it is called upon at the ſame time to put forth its leaves and branches. To ſpeak without a figure, the prolific ſun and air induce it to exhauſt the juices, in extending the ſhoots before the roots are ſufficiently ſtrong and large to ſupply the drainage; hence it is that, contrary to the commonly received opinion, a warm and dry ſpring is always injurious to the young plantations. If there be not ſufficient rain to convey ſuſtenance by the leaves and bark, in aid of the ſmall quantity procured by the root, the plant muſt die or dwindle; and it is very obſervable, that the firſt vigour of the late-planted ſet is a ſure prognoſticator of its decline or diſſolution. In the autumn of 1795 I made a ſmall plantation, and on the remainder of the

piece I planted in March following. In the beginning of May, thoſe laſt planted were the forwardeſt, which, for a time, ſtaggered my opinion of the moſt proper time for planting; but in June, thoſe planted in the autumn had much the advantage, and have continued to grow well: thoſe that were ſet in the ſpring, decayed in ſummer, and many of them died. When the fibres have been formed before the winter, or when a tendency to form them has been obſerved, by the ſwelling of the bark, and particularly at the eye, the plant is enabled to charge itſelf with a ſufficient portion of the juices to anſwer the demand of ſpring.

The rule, therefore, which I lay down for myſelf, where no obſtructions are raiſed by the water, is to plant as early in the autumn as I can cut the ſets, without endangering the parent ſtock.

I am, &c.

J. PHILLIPS.

Ely, Feb. 3, 1798.

Mr. MORE.

In the Seſſion of the year 1796 and 1797 (ſee Vol. XV. page 289) Mr. HARPER, of Bank-Hall, in Kirkdale, Lancaſhire, communicated to the Society the following Obſervations relative to the different modes of cultivating Wheat; but as the terms of the Society's Advertiſement were not fully complied with, the Quantity of Land cultivated in each mode not being ſo great as required, Mr. HARPER could not be conſidered as entitled to the Premium offered: yet, reflecting on the judicious Obſervations contained in the Paper, and the advantage it may be to the Public to have thoſe Obſervations laid before them, the Society voted to Mr. HARPER their SILVER MEDAL, and the Paper is now printed.

SIR,

I TAKE the liberty of addreſſing to the Society for the Encouragement of Arts, Manufactures, and Commerce, the

following ſtatement of the cultivation of a field on the Bank-Hall eſtate, in my poſſeſſion, containing (according to a late ſurvey) twelve acres two roods twelve perches (ſtatute meaſure), with an account of the management of a crop of Beans, and produce thereof, the preſent year 1796, and the preparations, by ploughing and harrowing, as well as the different methods made uſe of in ſowing the ſame with Wheat the preſent autumn.

The field had been a meadow for thirty years, and had been regularly manured, by which means the hay it produced began to grow coarſe, and not ſo nutritive as might be wiſhed; for which reaſon I ploughed it up, as ſoon as the after-graſs was eaten off, in the autumn of 1793; and, in the ſpring of the year 1794, ploughed it twice more, and ſowed it with barley, which produced ſeven quarters per acre. In the autumn of 1794 I ploughed it into one-bout ridges, to lie by the winter; and, in the ſpring of the year 1795, I ploughed it twice more, and

ſowed

ſowed it with barley again (yet ſtill without any manure), which produced ſix quarters per acre: the crop was much lodged, otherwiſe the produce would have been equal, if not ſuperior, to that of 1794. In the autumn of 1795 I ploughed it again into one-bout ridges, to lie by the winter; and in February 1796 I ploughed the ridges acroſs, and then manured it with about ten tons of dung to the acre, harrowed it in, and on the ſeventh day of March began drilling it, making the drills eighteen inches aſunder: by the twenty-third of the ſame month it was all ſown. Eight acres were of the early Blue Bloſſom, which were ſown by hand in the drills, and the drills were harrowed down to cover them, which left the land quite even: the other four acres and a half were Mazagan Beans, which were laid in the drills by hand; for, by being large, they do not ſow well either by the hand, or by a machine; they were harrowed, to cover them, the ſame as the others. The produce of the Blue Bloſſoms was five

quarters and a half per acre; the produce of the Mazagan, five quarters per acre. The quantity of ſeed ſown, per acre, of the Blue Bloſſom, was one buſhel and twenty-ſix quarts; the quantity of the Mazagan was two buſhels per acre.

Bank-Hall, Kirkdale, Oct. 27, 1796.

Expence of Drilling.

	£.	s.	d.
To drilling 12 acres 2 roods 12 perches, at 3s. per acre	1	17	9
To ſowing 8 acres of Blue-Bloſſom, at 9d. per acre	0	6	0
To laying in the drills, by hand, 4 acres 2 roods 12 perches of Mazagan, at 2s. per acre	0	9	2
To covering beans in drills, at 1s. 6d. per acre	0	18	10
To horſe-hoeing twice, at 2s. 6d. per acre	3	3	2
To hand weeding, at 1s. per acre	0	12	6
To reaping (by hand-cutting), at 7s. per acre	4	7	6
To 2 quarters 7 buſhels 20 quarts of Seed-Bean, at 2l. 5s. per quarter	6	12	10½
	£.18	7	9½

Comparative

Comparative Statement of (what would have been) the Expence of Broad-Caſt.

	£.	s.	d.
*To ploughing the land into butts, for the ſeed to be ſown, at 6s. per acre - -	3	15	0
To ſowing Beans broad-caſt, at 6d. per acre	0	6	0
To harrowing ſeed in, at 3s. per acre -	1	17	6
To dibbling in ſuch Beans as were left uncovered by the harrow, at 6d. per acre	0	6	0
To mowing, gathering, and binding up, at 5s. per acre - - - - - -	3	2	6
To 5 quarters 6 buſhels of Seed-Beans, at 2l. 5s. od. per quarter - - -	12	19	3
Broad-Caſt	£.22	6	3
Drill Huſbandry	£.18	7	9½
Balance in favour of the Drill Huſbandry	£3	18	5½

*N. B. The previous working of the land is not brought into this account, but taken in the ſame ſtage of Drill and Broad-caſt management.

OBSERVATIONS.—Charging every expence attending both the Drill and Broad-caſt Huſbandry, it appears, that double the quantity of ſeed is uſed when ſown broad-caſt, than when drilled in drills eighteen inches apart; and the produce of a crop of Beans is (with me) moſtly one third leſs in quantity per acre by the Broad-caſt Huſ-

dry than by the Drill Huſbandry. The time of reaping the above crop of Beans was the laſt week in September, which was three weeks later than I ever reaped before, though ſown equally as early in the ſpring; but this backwardneſs was occaſioned by the ſeaſon, not by the Drill.

Mode of uſing the Straw.—Some of the ſtraw is uſed for litter, and ſome for cutting, and mixing with light corn for young ſtock, ſuch as colts, &c. and for cart and plough horſes; and when it is well got, there may be a great ſaving of hay; for, at the time of ſupping the horſes up, after they are bedded, give every horſe a ſmall armful before him, and he will need little or no hay in his rack, and will equally work as well, and keep his condition, as if his rack was ſupplied with hay; and that part of the ſtraw which he does not eat, ſerves for freſh litter for him the following night, and (with me) I think it makes the beſt manure, by putrifying ſo ſoon.

Nature

Nature of the Soil.—The ſoil of this field is a ſtrong hazel loam, about ten inches deep, and under that is a brown loamy ſand, twelve inches deep; under which ſand, in a part of about four acres, is a yellow rock: in all other parts of the field (under the ſand) there is marl, about four yards deep, under which is yellow ſand.

Horſe-hoeing.—The horſe-hoeing was performed in the following manner. The land being left quite even when the Beans were covered, I have a ſmall light machine, in the form of a plough, which is only two inches broad on the ſole or bottom part (which is alſo uſeful for hoeing potatoes); this machine was drawn up the ſide of each row of Beans, for the firſt hoeing, when they were about three inches high: the inſtrument, being ſo narrow, left a ſmall rib of earth in the centre of the drill; and, when they were about twelve inches high, the ſecond hoeing was performed with a double-mould board-plough, with two reeſts, four inches

inches broad on the ſole part, which was drawn up the centre of the drill, and divided the rib of earth, before left, to each row of Beans, which then made a perfect drill.

Sowing Wheat.—After the Bean-crop was cleared off the land, the firſt preparation for the ſowing of Wheat, was running the plough acroſs the drills, as deep as the bottom of the drills; this being done, I harrowed it with a harrow (which I call the cultivating harrow), which brings moſt of the weeds, &c. that are within the land, to the top. It was then run over with a common harrow, and all the weeds, &c. picked off, and laid by for compoſt, with the addition of horſe-dung, &c. It was then ploughed into butts of three yards broad, and thirty yards were ſown broadcaſt, and thirty yards ſown in drills (at nine inches), all through the field, which is now finiſhed, and is little inferior, for cleanneſs and good condition, to a ſummer fallow.

HENRY HARPER.

The ſubſcribers have viewed the field above mentioned, in Mr. Henry Harper's farm, and have conſulted the account ſtated, of the meaſurement of the field, from a plan lately taken, and have ſeen the Bean-drills, after the crop was reaped, but before ploughed up again for wheat; and have meaſured the diſtance of the drills, each of which correſpond as above ſtated. The crops of Beans, ſo far as might be collected from the appearance of ſtubble, appeared good, and the land clean in general, only from chickweed. We have alſo again viewed the land of the ſame field, after being ſown with Wheat, and finiſhed off in a complete manner, and examined the labourer who aſſiſted in thraſhing a part of the Bean-crop, to aſcertain the produce of the whole land; and believe, ſo far as we have obſerved from the information obtained, that the contents of the letter are truly and fairly ſtated.

HENRY HEATHCOTE,
Vicar of Walton.

S. HOLT,
Surveyor of Agriculture for the county of Lancaſhire.

Walton, Oct. 27, 1796.

Mr. MORE.

SIR,

BY laying the incloſed paper before the Honourable Society for the Encouragement of Arts, Manufactures, and Commerce, you will oblige,

SIR,

Your moſt obedient Servant,

HENRY HARPER.

Mr. MORE.

N. B. If a ſample of the Beans, which is very fine, be requeſted, it ſhall be ſent on the ſhorteſt notice.

To the Society for the Encouragement of Arts, Manufactures, and Commerce.

My LORDS and GENTLEMEN,

THE following experiments, with remarks on the different modes of the culture of Wheat, was executed in a field, of eleven ſtatute acres, in my farm, in the month of October, 1795. Twenty yards broad

broad was ſown broad-caſt, and then twenty yards broad in the different modes hereafter explained; ſo that no one mode ſhould have the advantage of the other, of having either better land, or in higher condition, and which had all the ſame dreſſings, &c. to the time of putting in the ſeed.

EXPERIMENT I.

The old mode of broad-caſt produce, was fourteen threave to the acre, clear of the tithe, and four buſhels in the threave. Weight 61lb. ½ per buſhel, neat, which is 7 quarters per acre, at 58s. per quarter, - - £.20 6 0

Straw, weight 300lb. per threave, at 3d. per ſtone, of 20lb. is 3s. 9d. per threave, and per acre, - - - 2 12 6

£.22 18 6

To 105lb. of ſeed, at £.5 2s. 8d. per quarter,* £. 1 2 5½

Sowing by hand, broad-caſt, per acre, 0 0 6

1 2 11½

Amount of Corn and Straw, per acre, £.21 15 6½

* The market price of Wheat is taken at the time of ſowing, and at the time of reaping, which makes ſo conſiderable a difference in the value, viz. £.2. 18s. 0d. and £5. 2s. 8d.

EXPE-

EXPERIMENT II.

Cooke's Drill. Produce, was 13 threave to the acre, clear of the tithe, and 4 bushels in the threave, weight 61lb ½ per bushel, neat, which is 6 quarters and 4 bushels per acre, and, at 58s. per quarter, amounts to - £.18 17 0

Straw, weight 300lb. per threave, at 3d, per stone, is 3s.9d. per threave, and per acre 2 8 9

£.21 5 9

	s.	d.			
To 87lb. of seed, at £.5 2s. 8d. per quarter, - -	18	7¼			
Sowing the seed with the drill, per acre,	1	6			
Covering the seed after drilling, per acre, . -	1	6			
Twice horse-hoeing, at 1s. 6d. per acre,	3	0			
			1	4	7¼

Amount of Corn and Straw, per acre, £.20 1 1¾

EXPERIMENT III.

Drills at nine inches, sown by the hand. Produce fifteen threave to the acre, clear of the tithe, and 4 bushels in the threave, weight 61lb ½ per bushel, neat, which is 7 ½ quarters per acre, and, at 58s. per quarter, amounts to £.21 15 0

Straw, weight 260lb. per threave, at 3d. per stone of 20lb. is 3s. 6d. per threave, and per acre, - - 2 8 3

£.24 3 3

To

Brought forward - - -				£.24	3	3
To 105lb. of ſeed, at £.5 2s. 8d. per quarter,	£.1	2	5½			
Sowing ſeed, broad-caſt, per acre,	0	0	6			
Covering ſeed, per acre,	0	1	6			
Twice horſe-hoeing at 1s. 6d. per acre,	0	3	0			
				1	7	5½
Amount of Corn and Straw, per acre,				£.22	15	9½

EXPERIMENT IV.

Drills made at 12 inches, from centre to centre, and three rows dibbled right up the middle of the drill, at three inches from plant to plant, and one grain of corn in a hole.

Produce was twelve threave per acre, clear of the tithe, and 4 buſhels and 2 pecks in the threave, weight 62lb. per buſhel, neat, 6 qrs. 6 buſh. per acre, at 58s. per quarter, is - - -				£.19	11	6
Straw, weight 340lb. per threave, at 3d. per ſtone of 20lb. is 4s. 3d. per threave, and per acre, - - -				2	11	0
				£.22	2	6
To 35lb. of ſeed, at £.5 2s. 8d. per quarter,	£.0	7	3½			
Dibbling, per acre,	0	18	0			
Covering ſeed after dibbling, per acre, - -	0	1	6			
Twice horſe-hoeing, at 1s. 6d. per acre - - -	0	3	0			
				1	9	9½
Amount of Corn and Straw, per acre,				£.20	12	8½

EXPE-

EXPERIMENT V.

Dibbled on the land, three rows, at three inches from plant to plant, and one grain of corn put in a hole, and a ſpace left between every third row, for horſe-hoeing.

Produce, eleven threave per acre, clear of the tithe, 4 buſh. 2 pecks in the threave, weight 62lb. per buſhel, neat, 6 qrs. 1 buſhel and 2 pecks, per acre, at 58s. per quarter, is - - - £.17 18 10½

Straw 320lb. per threave, at 3d. per ſtone of 20lb. is 4s. per threave, and per acre, 2 4 0

£.20 2 10½

To 35lb. of ſeed, at £5. 2s. 8d. per quarter, is £.0 7 3½

Dibbling, per acre, - - 0 18 0

Covering ſeed after dibbling, per acre, - - 0 1 6

Twice horſe-hoeing, at 1s. 6d. per acre, - - 0 3 0

1 9 9½

Amount of Corn and Straw, per acre, £.18 13 1

EXPERIMENT VI.

Dibbled on the land, two rows, at three inches from plant to plant, and put one grain of corn in a hole, and a ſpace left between every ſecond row for horſe-hoeing.

Produce 11½ threave, per acre, clear of the tithe, and had 4 buſhels and 2 pecks in the threave, weight 62lb. per

per bushel, neat, 6 qrs. 3 bushels 3 pecks, per acre, at 58s. per quarter, is - - - £.18 15 2½

Straw, 340lb. per threave, at 3d. per stone of 20lb. is 4s. 3d. per threave, and per acre, 2 8 10½

£.21 4 1

To 31lb. of seed, at £.5 2s. 8d. per quarter, - £.0 6 7½

Dibbling, per acre, - 0 18 0

Covering the seed, per acre, 0 1 6

Twice horse-hoeing, at 1s. 6d. per acre, - - 0 3 0

1 9 1½

Amount of Corn and Straw, per acre, £.19 14 11¼

EXPERIMENT VII.

The land dibbled all over, at 3 inches from plant to plant, and one grain of corn put in a hole.

Produce 10½ threave per acre, clear of the tithe, 4 bushels 2 pecks in the threave, weight 61lb. ½ per bushel, neat, and 5 qrs. 7 bushels 1 peck, per acre, at 58s. per quarter, is - - - £.17 2 6¾

Straw, 300lb. per threave, at 3d. per stone of 20lb. is 3s. 9d. per threave, and per acre, 1 19 4½

£.19 1 11¼

		Brought forward,	£.19	1	11½
To 40lb. of seed, at £.5 2s. 8d. per quarter,	£.0	8	6½		
Dibbling, per acre,	1	1	0		
Covering the seed, per acre,	0	1	6		
				1 11	0½
Amount of Corn and Straw, per acre,			£.17	10	10¾

EXPERIMENT VIII.

The land dibbled one row, at four inches from plant to plant, and four grains of corn put in every hole, and a space left between every row for horse-hoeing.

Produce ten threave per acre, clear of the tithe, 4 bushels and 2 pecks in the threave, weight 60lb. per bushel, neat, is 5 qrs. 5 bushels per acre, at 58s. per quarter, is			£.16	16	3
Straw, 300lb. per threave, at 3d. per stone of 20lb. is 3s. 9d. per threave, and per acre,			1	17	6
			£.18	3	9
To 45lb. of seed, at £.5 2s. 8d. per quarter,	£.0	9	7½		
Dibbling, per acre,	0	12	0		
Covering seed, per acre,	0	1	6		
Twice horse-hoeing, at 1s. 6d. per acre	0	3	0		
				1 6	1½
Amount of Corn and Straw, per acre,			£.16	17	7½

Remarks

Remarks upon the different modes of Culture.

Exp. I. I prefer the old mode of broad-caſt upon ſtrong heavy ſoils, ſuch as marl or clayey, or on any land that lies on a cold bottom, becauſe ſuch land requires to be laid round, and in ſmall ridges; in conſequence of which the drill will not work well, and dibbling would not anſwer on ſuch land.

Exp. II. Cooke's Drill may anſwer, where the land is flat, even, and dry.

Exp. III. I prefer making the Drills at nine inches diſtance, and ſowing the land broad-caſt, but with one third leſs ſeed than broad-caſt; for though there was more ſtraw in this mode than any other of the experiments, by being ſo thick in the Drills, and the ſtraw was lighter, not weighing ſo much to the threave, and the corn appeared not quite ſo well fed, yet, when cleaned, the produce was the ſame weight per buſhel, and more in quantity than any other mode. Therefore I prefer this mode to Cooke's

Drill; for I think it will do with full as little ſeed.

Exp. iv. This mode of dibbling I prefer before any other; for the land was dryer, and, in conſequence of the corn being dibbled up the centre of the drill, and by being dryer, the plants did not mourn ſo much as the others when the weather was wet.

Exp. v. This mode is not ſo good as two rows together; for, when they came to be hoed, the middle row did not receive ſo much freſh earth as the other two.

Exp. vi. This mode, of two rows, I prefer before three; for when they came to be hoed, they flouriſhed the moſt.

Exp. vii. This mode, of dibbling the land all over, does not do well; for the plants were too thin, and could not be hoed. They did not ſucceed well.

Exp. viii. This mode ſucceeded the worſt of any; for the ſtems from the plants appeared always more weakly than any of the other modes, although they had rather the advantage of the hoe. If

If dibbling be practiſed, it ſhould be on light dry land; but upon any land the expences* of labour will over-balance the ſaving of ſeed: for the time, and number of hands it takes, prevent any attempts on a large ſcale, at leaſt to do it in proper ſeaſon, and while the land continues in condition; for if it be too wet, it will not dibble at all: and I do not think it will anſwer well on any land; for it is impoſſible to make a hole in the land that you can drop a ſeed into, but it will leave a kind of glaze round the hole, which being ſoon filled with looſe earth, when rain falls, it holds water, and ſtarves the plant. I thought this was the caſe with mine: and if dibbled at the ſame time when the drill or the broad-caſt is

* It has been frequently obſerved that dibbling may be performed by children, and therefore the expence is light. It is true that the fingers of young people may be better adapted to handle ſo ſmall a grain as wheat, than the fingers of grown people; yet every one knows the inattention and thoughtleſsneſs of childhood: and becauſe ſuch ſeeds are not ſeparated with eaſe, they will frequently drop, inſtead of one, probably half a dozen into one hole, whilſt the next, through the ſame careleſsneſs attendant upon that age, may omit the next hole; beſides, at this ſeaſon of the year, be the weather ever ſo temperate, the air is ſo cold as to produce

 a numbneſs

ſown, it will be ten days later than either, before it is ripe and ready to cut. However, after it was hoed, the dibbled came on more than the drilled. The firſt hoeing was the laſt week in March; the ſecond, the ſecond week in May. It was properly hoed, not ſcarified, for the earth was laid cloſe up to the plants. The hoeing was performed with a drill of my own conſtruction, which makes five drills at nine inches, five at twelve inches, three at eighteen inches, and three at twenty-four inches. And for hoeing, I have ſhares or ſucks, in the ſhape of a trowel, which I can fix on the points of the drills, and, by drawing it up between the drills, it divides the earth each way up to the plants, nearly equal to hand-hoeing. This drill will either drill or hoe. If the land be not quite even, it makes no alteration in the machine, for it depends on the man that holds it, to humour it accordingly as the land lies, which is eaſy to do.

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numbneſs in the extremities, to ſuch a degree as to prevent an ability to ſeparate the ſmall grains, the handling of which ſtill increaſes the degree of cold, and conſequently produces greater inactivity.—The ſize even of the leaſt bean renders the practice of dibbling more effectual in that article.

I prefer drilling to broad-caſt, on dry, weak, light, thin ſoil land, for any kind of grain, but more particularly for Wheat; for this kind of land is apt to loſe roots the latter end of March and beginning of April, which is the time the firſt hoeing ſhould take place, and which will prevent that diſeaſe.

The field on which the experiments were made, is a hazel, loamy ſoil, fourteen inches deep; two acres, bottom on a yellow rock; ſeven acres on a marl; and two acres on loamy ſand, about two feet deep, and afterwards marl. This field was marled thirty-three years ago, and has ever ſince been under the plough, nor has reſted more than having a crop of red clover, which was moſtly mown twice in the ſame year, and the ſucceeding year cropped with ſome ſpecies of grain.

In the year 1794 this field had red clover on it, the produce of which was very good. It was mowed twice; and early in the ſpring 1795 I ploughed it up, and ſowed it with vetches, which were cut off for

green crop; and as the land was cleared of the crop, it was ploughed thin; and when all the crop was cleared off, it lay about three weeks, and was then ploughed again, but not deeper than the firſt ploughing, upon which it appeared to be quite clean, and in good order. Being rather fearful of its not ſupporting ſuch a crop of wheat as I could wiſh, I made a compoſt, which was part marl and waſte ſoil, to which I put ten ſcore buſhels of lime, eighty tons of night-ſoil, coal-aſhes, ſweepings of ſtreets, &c. and, one week before it was turned over, I trenched into it, a foot deep, three hundred weight of pot-aſh, pounded fine, and turned it all over together; the lime was in its flowery ſtate: when turned, the field was all regularly ſet over with this compoſt, about twenty tons to the acre, and then ploughed up into butts of three yards broad, then ſown as above deſcribed.—The furrow was about nine inches broad, and four inches and a half deep.

But what was the cauſe of this produce being ſo much above the general average I cannot

cannot aſcertain; whether owing to the ſeaſon, or ſome unknown quality the pot-aſh might add, I cannot ſay, not having preſence of mind to keep a little of the compoſt clear of the pot-aſh. The field has produced good crops of Wheat before, and often as much, or more ſtraw, but never ſo much grain before; nor ever did I hear of ſo much corn being produced from the ſame breadth of land. And I ſhould feel ſome heſitation of laying this account before the public, were not the facts, both as to quality and quantity, confirmed by other teſtimony than my own, as will appear from the annexed certificates. The ſpecies of Wheat is the common Yellow Wheat, which I got from the South three years ago.

Although the experiments may not claim the premium offered, for a comparative eſtimate of the broad-caſt and drill-huſbandry, yet the experiments are of too important a nature to be withheld from the public, and upon too extenſive a ſcale, not to render them of importance. So far as my reading goes,

goes, I have never heard of any thing of equal extent and variety. I can venture to affirm, that nothing is aſſerted herein but the truth, and the reſults and facts have been carefully aſcertained; but the difficulty, the care, the attention and labour, to keep every part ſeparate, and to weigh each part, is a degree of trouble, of which thoſe who have not experienced ſuch things can have no conception; nor ſhould I have undertaken the taſk, had I previouſly known the great care and circumſpection neceſſary to the proper inveſtigation of ſo many circumſtances. Under all theſe embarraſſments I am not diſcouraged, but propoſe to proſecute the ſubject, and endeavour to aſcertain the comparative difference betwixt the Drill and Broad-caſt Huſbandry, having nearly thirty ſtatute acres under that management this ſeaſon, a very ſmall portion of which is dibbled, by way of confirming or confuting the experiments herein mentioned. I rely upon the candour of the Society, to whom this Paper is addreſſed, for a favourable interpretation

terpretation of my motive; and if farther ſanctioned by any honorary or pecuniary marks of their approbation, ſuch tokens of their regards will be gratefully accepted, and thankfully received by,

My Lords and Gentlemen,

Your obedient humble Servant,

Bank-Hall, Kirkdale,
Feb. 1, 1796.

HENRY HARPER.

WE, the underwritten, were requeſted by Mr. Harper to view the field intended for experiments, previous to its being ſown, but after it had been parcelled out into different lots, of twenty yards broad each, as deſcribed; and afterwards viewed it again, when the proceſs of ſowing, dibbling, and drilling, had commenced. We have no doubt in ſaying that, from what we ſaw, and from Mr. Harper's well-known veracity, the account here given is truly ſtated.

HENRY HEATHCOTE,
Rector of Walton.

JOHN HOLT,
Surveyor of Agriculture for the County of Lancaſter.

WE, the underſigned, being ſervants and labourers under Mr. Henry Harper, have aſſiſted in the different operations of ploughing, ſowing, dibbling, and drilling, thraſhing, winnowing, and weighing the different lots, and can aſſert, from our own knowledge, that the account which has been read to us is truly ſtated.

HENRY HIGGINSON, Servant.
WILLIAM BRINDLE, Labourer.

MR. Henry Harper, feeling ſome diffidence in laying before the public the uncommon produce of a crop of Wheat in 1796, wiſhed to know whether the tithe collected from the ſame field could be ſeparated, and whether I would oblige him, by thraſhing a certain part of it ſeparately, and which I fortunately was enabled to perform; and upon trial, found as under, viz.

Marketable Wheat, 4 buſhels, 1 peck, 6 quarts (Wincheſter buſhel), per threave, taken out by the riddle; and ſmall Wheat, about two quarts. Weight, per Wincheſter

cheſter buſhel, 59lb. This was weighed the 26th of January, 1797, and Mr. Harper's in November, 1796, which may account for the difference of weight.

N. B. A few of the ſheaves thraſhed were damaged by the mice.

EDWARD STABLE,
Tithe-Farmer for Kirkdale.

I, THE underſigned, purchaſed 75 buſhels of Mr. Harper's Wheat, of 61½lb. to the buſhel, grown in the field above deſcribed, in 1796, and can certify for its very ſuperior quality, and that the account above ſtated on that head is ſtrictly true.

GEORGE BLUNDELL, Corn Inſpector.

The Amount of Produce and Expence attending the Crop of Wheat.

To rent of field,	-	£.25	0 0
Taxes,	- - -	2	10 0
Repairs in gates, fencing, and ditching,	- -	0	7 6
		£.27	17 6

Three

				£.	s.	d.
Brought forward -				27	17	6
Three times ploughing, at 7s. per acre, - -	£.11	1	0			
Two qrs. of ſeed, at £5. 2s. 8d. per quarter, - -	10	5	4			
Once harrowing, at 2s. 6d. per acre,	1	7	6			
Sowing ſeed broad-caſt, at 6d. per acre, - -	0	5	6			
Weeding, at 6d. per acre,	0	5	6			
Reaping, at 8s. per acre,	4	8	0			
Carting home from field, &c.	4	8	0			
Thraſhing 77 qrs. at 2s. 8d. per qr.	10	5	4			
Carting to market, &c. -	5	0	0			
Carting ſtraw to market, at 1s. per load, - -	3	17	0			
Weighing ſtraw, &c. -	0	10	0			
				51	13	2
Carting 90 tons of marl, at 1¼d. per ton, - -	0	9	4			
Carting 40 tons of ſoil, at 4d. per ton, -	0	13	4			
Two hundred buſhels of lime, at 8d. per buſhel - -	5	16	8			
Carting to the field, -	1	4	0			
Eighty tons of night-ſoil, &c. at 2s. 6d. per ton, -	10	0	0			
Carting to the field, at 4s. per 1½ ton, -	10	12	0			
Carting out of the ſtreets in the night, to a proper place, to be						

taken

taken away when convenient,					
at 1s. per ton -	£.4	0	0		
Three cwt. of pot-aſh, at 50s. per					
cwt. - -	7	10	0		
Carting ditto to the field -	0	1	0		
Trenching pot-aſh into the compoſt,	0	2	0		
Turning over the compoſt, -	0	6	0		
Carting and ſpreading the compoſt on					
the land, 4d. per ton,	3	13	4		
				44	7 8
Total expence				£.123	18 4
By 77 qrs. of wheat (the ſuppoſed					
average produce, according to					
the quantity already dreſſed),					
at 56s. per quarter,	£.215	12	0		
By 154 threave of ſtraw, at 3s. 6d.					
per threave - - -	26	19	0		
				242	11 8
Clear profit				£.118	12 8

This expence of labour is charged as if all the land had been ſown broad-caſt.

N. B. Now the general average which I ſhould have expected from this field, and with which I ſhould have been well ſatisfied, would have been four quarters per acre, and then the account would have been as follows:

Forty

Forty-four quarters, at 56s. per quarter.	£.123	4	0
The average of the ſtraw expected, would have been one third leſs, - -	17	19	4
Total amount of produce,	£.141	3	4
Expence	£.123	18	4
Clear profit	£.17	5	0

Although the produce of this amazing crop has not yet been clearly aſcertained, but an average drawn from what has actually been dreſſed, yet a fair account, when the whole is thraſhed, will be carefully taken and preſerved, and, if it be found to vary in a conſiderable quantity, ſhall be faithfully laid before the Society to whom this Paper is addreſſed.

The

TWENTY GUINEAS, being the Premium offered for having planted or drilled not leſs than ten Acres of Land with BEANS in the year 1796, and ſown the ſame Land with WHEAT in the ſame year, was this Seſſion adjudged to Mr. JOSEPH WEBSTER, of Bankſide, near Doncaſter, from whom the following Papers were received.

My LORDS and GENTLEMEN,

I TAKE the liberty of tranſmitting to you an account of ſixteen acres of land drilled with Beans in March, 1796, and ſown with Wheat the ſame year.

The ſort of Beans was the common Horſe-bean, drilled by Cooke's Drill: ſix acres were drilled, at twelve inches diſtance, with ten pecks per acre; ten acres were drilled with ſeven pecks per acre; two rows at nine inches, with an interval of twenty-ſeven

inches between every two rows. The above ſixteen acres were drilled the 14th and 15th of March, and reaped from the 29th September to the 6th of October, 1796. The produce of the above ſix acres was forty-eight buſhels and a half per acre; the produce of the ſaid ten acres was fifty-one buſhels and three-quarters per acre. The ſtraw was uſed in the ſtable, cow-houſes, and yard, for litter. The expence of drilling, eight pence per acre; harrowing after the drill, three pence per acre. The ſix acres were ſcarified twice, and horſe-hoed once, at ſixpence each time, *i. e.* one ſhilling and ſixpence per acre the whole. The ten acres were hand-hoed, in particular places, between the rows at nine inches, at one ſhilling per acre, and three times ploughed between the intervals of twenty-ſeven inches wide, at one ſhilling and ſixpence per acre each time, *i. e.* four ſhillings and ſixpence per acre the whole. The ſoil was originally a ſtrong clay, but now greatly improved by a ſediment or mud (commonly

(commonly called warpe) from the river Dun.

I am,

My Lords and Gentlemen,

Your moſt humble ſervant,

JOSEPH WEBSTER.

Bankſide, near *Thorne*, *Doncaſter*,
Yorkſhire, *Oct.* 30, 1797.

I JOHN SANDERSON, of Dikes Marſh, , in the pariſh of Thorne, do hereby certify, that Mr. Joſeph Webſter, of Bankſide, in the pariſh of Thorne, and county of York, drilled, in the month of March, 1796, ſixteen acres of land with Beans, and ſowed the ſame with Wheat in the ſame year, viz. 1796; as witneſs my hand, this 30th day of October, 1797,

JOHN SANDERSON.

Dikes Marſh, *Oct.* 30, 1797.

I JAMES CUTLER, of Thorne, do hereby certify, that Mr. Joſeph Webſter, of Bankſide, in the pariſh of Thorne and county of York, drilled, in the month of March, 1796, ſixteen acres of land with Beans, and ſowed the ſame with Wheat in the ſame year, viz. 1796; as witneſs my hand, this 30th day of October, 1797,

JAS CUTLER.

Thorne, Oct. 30, 1797.

SIR,

I RECEIVED your letter, dated 28th of November, and beg leave to inform you that I ſigned a Certificate, dated the 30th October, 1797, certifying, that Mr. Joſeph Webſter, of Bankſide, in the pariſh of Thorne and county of York, drilled ſixteen acres of land with Beans in the month of March, 1796, and ſowed the ſame with Wheat in the ſame year, viz. 1796; which land Mr. James Cutler, that wrote the other Certificate,

tificate, has measured, and there are sixteen acres and seven perches statute measure.

I am, SIR,

Your very humble servant,

JOHN SANDERSON.

Ditch Marsh, Dec. 16, 1797.

The Premium offered for Comparative Culture of TURNEPS, Claſs 90, being the GOLD MEDAL, or the SILVER MEDAL and TEN GUINEAS, was this Seſſion adjudged to Mr. JOHN EXTER, who made choice of the SILVER MEDAL and TEN GUINEAS, and whoſe Papers on the ſubject are here inſerted.

SIR,

HAVING, for fifteen years paſt, paid great attention to Agriculture in general, and the cultivation of Turneps, as food for ſtock, in particular, I have, in the courſe of that time, made a variety of experiments, with a view to aſcertain the advantages ariſing from different modes of managing them. I take the liberty, therefore, of offering my obſervations on that crop, to your Society's attention. I have, this year, made a comparative trial on a field of ſix acres and a half (the ſucceſs of which is herewith ſent to you),

you), with a view to promote the Society's object; for which they have offered their premium No. 90, which I now take the liberty of becoming a claimant for, and which if I ſhould be conſidered worthy of, in conſequence would afford me a high gratification, which would only be exceeded by the pleaſure of reflecting on having, in any way, aſſiſted in forwarding the views of the Society, and perhaps the agriculture of my country. I have endeavoured to confine my obſervations within as ſmall a compaſs as I could, to be explicit. I am, with the higheſt reſpect for the laudable intentions of the Society,

SIR,

Your humble Servant,

I. E. P. B. D.

My correſponding paper, as ordered by the Society, deſcribing my addreſs, &c. &c. containing the certificate of the experiment I produce, is marked with the letters I. E. P. B. D.

A ſix-acre field of light ſandy loam, from four to five inches deep, on a clayey ſubſtratum, which had been previouſly exhauſted by white ſtraw crops, and which I rent at 30s. per acre, though I conſider it too dear in the price (the ſoil of which differs but very little in any part of the field), was ploughed from a barley ſtubble, in December, 1796, and was croſs-ploughed the laſt week of May, ſcuffled acroſs in June, four acres of which were manured with dung, and the remainder by the ſheepfold. The part dunged had 120 horſe-loads of rotten ſtall dung, 250 cwt. each, per acre; the part folded had at the rate of 1200 ſheep per night, per acre. The whole field was ploughed again as ſoon as the manuring was completed, and on the 15th of July was ſown acroſs the different manurings, as follows: half the field broad-caſt, one pound of ſeed per acre; one acre of the remainder, drilled with Cooke's drill machine, with about half a pound of ſeed per acre, at eighteen inches diſtant from row to row; and the remainder with the

ſame

ſame machine, three quarters of a pound per acre, in rows, at a foot aſunder. The weather being favourable, with frequent ſhowers, the whole field planted ſufficiently well for a crop; but the different parts varied much in their progreſs in getting into the rough leaf, and conſequently eſcaping the danger of the fly. The drilled, at a foot apart, ſeemed to loſe the ſmalleſt number of plants; the drilled at eighteen inches, the next; and the broad-caſt, the largeſt number; and conſequently was, in many places, patchy, with intervals of four or five feet without any plants at all. There was alſo a degree of vigour obſervable on the part manured with dung, much ſuperior to that manured by the ſheepfold; the former got into the rough leaf many days ſooner, and ſaved a much larger number of plants. The whole crop was hand-hoed once; the broad-caſt coſt 8s. 2d. the drilled part 5s. 10d. per acre.—A large quantity of ſeed weeds, which had been carried out with the dung, had ſhown themſelves previous to the hoeing, and

many

many ſprung up again after, and were more particularly apparent in the broad-caſt part of the field, and in the intervals where that crop had failed: the drilled part had not nearly as many weeds, from the turneps growing faſter, and keeping them under, or perhaps their being more effectually cut up by the hoe, in the intervals between the rows. The part of the field manured with dung was all ſuperior in its growth to the part folded on, throughout the autumn, and is at this time as three to two better. The ſuperior advantage of drilling to broad-caſt is more particularly apparent in the part of the field manured with the fold; and the twelve-inch intervals are alſo in this part more ſuperior to the eighteen-inch intervals, than on the part manured with dung.

February 27, 1798, four ſquare perches of each of the different modes of ſowing, were meaſured off by the Miniſter of the Pariſh, and the Overſeer of the Poor, who is a farmer, and rents £.400 per annum in the ſaid pariſh, in preſence of ſeveral other

other perſons; and the turneps drawn from each portion were ſeparately weighed, their tops and tails having been previouſly cut off; and the produce of clean roots was as follows:

The four perches drilled at a foot,	962
The four perches drilled at 18 inches,	888
The four perches broad-caſt,	555

I think it right here to remark, that the four perches of the broad-caſt fixed on were more fully ſtocked with good plants than the general average of the broad-caſt part, theſe four perches having ſcarcely a failing ſpot. The broad-caſt part in general being ſomewhat patchy, and the drilled pretty uniformly filled with plants, over all the field; I am certain, had the whole of each portion been weighed, the drilled would have exceeded the broad-caſt more than two to one. The bulbs of the drilled turneps were rounder, and more nearly of a ſize, than the broad-caſt, which I think muſt be owing to the more equal diſtances

their

their roots had to feed in; and perhaps to this circumſtance, more than any other, it owes its extra produce.

The following remarks on the cultivation of Turneps have been made by myſelf, in ſucceſſion of practice for fifteen or ſixteen years; and I therefore take the liberty of adding them, as I can declare them founded on obſervation.

Soils for Turneps.

Sandy loams, in good heart, are moſt favourable to their growth, though they will thrive well on ſtrong loams, if they are not wet: but on clayey, thin, or wet ſoils, they are not worth tilling; the crop is always poor, and the land injured by them.

Preparation of the Soil for them.

Plough three or four times; the firſt time before Chirſtmas, and harrow or dig the land as often as it is weedy; and always previous to the ploughings, manure ſhould be laid on immediately before the laſt plough-

ing.

ing. If the land is dry, plough it quite flat; if the ſoil is diſpoſed to be wet or ſpringy, gather it into beds or ridges, ſufficiently high to keep it dry; or gather it, after manuring, into four furrow ridges, and drill on the top of each ridge; and plough the intervals twice during the growth of the crop, firſt ploughing off from the ſides of the ridges, and next back again, up to them. Hand-hoe the tops of the ridges.

Paring and burning the turf, at firſt breaking up old ſwards, is the beſt preparation in many ſituations. After paring and burning, plough twice, the firſt time very thin; then ſpread the manure, and turn it in with a full-depth furrow, on which ſow immediately, and harrow once to cover the ſeed.

Manuring.

Land cannot be too rich for Turneps, eſpecially if the crop is to be carted off from the land. The beſt manures I have experienced are as follow: I place the beſt firſt, the

others

others in ſucceſſion, according to my opinion of their merits; 1. dung, 2. ſoap-aſhes, 3. ſheepfold, 4. lime; the laſt the leaſt to be depended on. I think it is of very little uſe in ſecuring the young plant from the fly, but it promotes the after-growth of the crop. I think all the noſtrums offered as preſervatives againſt the fly are mere quackery. Good manuring, with freſh dung, juſt rotten enough to plough under, is the beſt; ſpread your dung juſt freſh before the plough, and as ſoon as poſſible after the laſt ploughing.

Seed and Seed proceſs, &c.

The tankard turnep the beſt for early feed, the white round ſtock for the middle ſeaſon, the green top for late ſpring feed. Sow new ſeed in preference to old: if broad-caſt, one pound and a half per acre; and harrow once at a place to cover it. I have often mixed my ſeed in damp ſaw-duſt, for the ſake of increaſing its bulk, and diſtributing it more regularly, allowing half a

buſhel

buſhel of ſaw-duſt to the quantity of ſeed per acre ſown broad-caſt. If you drill, half the ſeed is ſufficient, and depoſit it from one inch and a half to two inches deep; if the ſoil is damp at the time, the better. The placing Turnep-ſeed deep in the ſoil accelerates the growth of the plant, by giving it moiſture, and gets it ſooner out of the power of the fly. The beſt diſtance for the rows appears to be at one foot apart, except for the tankard turnep, in very rich ſoils, to be eaten off early, where perhaps eighteen inches may be equally advantageous. I have ſeveral times drilled my turneps in very foul land, two rows at a foot aſunder, with an interval of two feet, the narrow interval hand-hoed, and the wide interval twice ploughed with the common plough; and this far exceeded the broad-caſt in the ſame field, both in fallow and crop.—Never harrow fine, or roll the land after ſowing the ſeed: the more ſmall clods are left on the ſurface the better, provided they do not exceed the

ſize

ſize of a turkey's egg. Horſe-hoe the drilled, and hand-hoe the broad-caſt crops, and both at an early period, viz. as ſoon as the plants expand their leaves as wide as a crown-piece. By early hoeing the weeds are checked, and the crop forwarded in growth. The operation may be repeated if weeds come on again. In general, a ſecond hoeing is neceſſary.—From repeated trials, I am ſatisfied that drilling Turneps is preferable to ſowing them broad-caſt on every ſoil where the land is not ſo declivous as to prevent ſowing with a drill, and even on lands too ſtony to admit the horſe-hoe: it diſtributes the ſeeds more regularly, and depoſits it to any depth required, by which it is often ſecured from the fly, by being accelerated in its growth; and, in ſoils that will admit the horſe-hoe, it leſſens the expence of hoeing more than one half: and, beſides producing a better Turnep-crop, it prepares the land better for the crop of corn that follows it than any hand-hoeing whatever. Beſides, Turneps always come to

hoeing

hoeing in the buſy time of harveſt; and when you cannot ſpare men to hand-hoe at all, a man, boy, and horſe, will horſe-hoe five or ſix acres per day.*

Application of the Crop.

I have uſually given my Turneps to different ſtock, viz. ſheep and bullocks, as ſuited me beſt at the time: but I think the beſt application of them is to fat ſheep, who are to eat off the freſh-ſtocked part; and their leavings may be eaten by lean ſheep that follow them, or yearling cattle, if the land is dry enough to bear them. If the land is damp and poachy, they ſhould be carted off for cattle to a dry piece of land, or a yard adjoining. The beaſts ſhould have hay or ſtraw, as much as they will eat with them. Some years ſince I made an experiment to aſcertain what would be

* The experiments referred to, and the horſe-hoeing, have all been executed with Mr. Cook's Machine, which I conſider the moſt complete Drill Machine and Horſe-Hoe that I have had an opportunity of working with.

the difference of giving cattle hay or ſtraw to eat with them. I took twelve beaſts, in the ſame ſtate of fatneſs, and which had been kept the preceding ſummer together, and tied them up in different yards; ſix had hay with the turneps, and ſix had ſtraw. The cattle fed with hay were finiſhed and ſold in May, the others in June. I have not repeated the experiment, as I was ſatiſfied from this that it would not pay to feed turnep ſtock on hay, if they are to go to graſs after. I find Turneps of great uſe in rearing calves. I always give them as much hay as they will eat with them, and never permit them to drink, or give them any milk after I get them to eat Turneps, which they generally take to at about ten weeks old.

I bring them to eat Turneps, by keeping them twenty-four or thirty hours without any milk or water, and then cut the Turneps into thin ſlices, and put ſome of them into their mouths; this ſoon brings them o pick them up from their mangers.

WE,

WE, whoſe names are hereunto ſubſcribed, the miniſter and overſeer of the poor of the pariſh of Pilton, in the county of Devon, do hereby teſtify, that on the 27th day of February, 1798, we viewed a crop of Turneps, of ſix acres and a half, cultivated by Mr. John Exter, in the ſaid pariſh, the one half of which crop was ſown broad-caſt in the common mode of the country, and the other half drilled in two different methods, viz. one acre in drills with intervals of eighteen inches, and the remaining two acres and a half in drills at one foot apart; and that we meaſured off four ſquare perches of each, and drew up and weighed the produce of clean Turneps, their tops and tails being previouſly cut and cleaned off, and that we found the produce of each part as follows:—

	lb.
The four perches drilled at a foot -	962
The four perches drilled at 18 inches	888
The four perches broad-caſt - -	555

And we think that the fallow on the part drilled was much finer, cleaner, and in better condition for the ſucceeding ſpring crop than the broad-caſt part; and that the perſon who managed and hand-hoed the ſaid crop was preſent at the ſame time, and aſſured us that the manuring and cultivation of the ſaid ſoil differed in nothing but the mode of ſowing; that he hoed an acre of the drilled crop in five days with more eaſe than he could hoe the acre broad-caſt in ſeven; and that we were, from this experiment, induced to believe that the method of drilling Turneps adopted by Mr. Exter is far ſuperior to broad-caſt ſowing.

Witneſs our hands,

WM. SPURWAY, Miniſter of Pilton,
ROBT. CAWSEY, Overſeer of the Poor.

The

The Thanks of the Society were this Seſſion given to Mr. HENRY HARPER, of Bank-Hall, in Kirkdale, Lancaſhire, for the following Communication relative to the Culture of POTATOES, and the application of that Root to the feeding various kinds of Stock.

Potatoe Culture on my Farm, which is nearly the ſame through both Lancaſhire and Cheſhire.

OF the early ſort there are a great many kinds, and are planted in various ways. The beſt early kind are the Broton's Dwarfs, for they have never yet been known to curl; and they are always good, though there are many ſorts that may, by chance, over-crop them for a ſeaſon or two, and then run off to curl. The next early ſort I prefer, are the Dwarf Manleys, which come in about two weeks later, have never been known to curl, and are always good; and, if the

land be made rich, they will crop nearly equal to any winter ſort. The next that comes in to theſe are the Champion, which always crop well, but are not much eſteemed here; for they have a ſtronger coarſe taſte than any of the other ſorts. (For the management of theſe, in their culture, ſee the Lancaſhire Report.)

The general Crop for Winter-ſtore.

The beſt time for planting, is from the firſt of May to the twelfth, to have real good Potatoes; but there are often great crops obtained, which are planted from the twelfth to the thirty-firſt. There are a great many ſorts of theſe; but for houſe uſe I prefer planting a few of the Scotch White: for the general planting, I prefer the Pink-eye; and, for fear of the curl, I every year change my ſeed, and get of thoſe that have been planted on the moſſes. Theſe put out large branches, which keep the land clean; and if they keep clear of the curl, they always crop well, and will keep

in

in great perfection for houſe uſe. Then, after Midſummer, the Apple Potatoe will keep the longeſt in perfection; but I ſeldom get above half a crop of them, and they are troubleſome to boil; for it is very rare that you can get them thoroughly boiled to the heart.

For Cattle, &c.

I prefer planting the Ox-Noble and the Cluſter Potatoe (to be planted any time from the firſt of May to the thirty-firſt); for theſe will crop well on almoſt any kind of land, if ever ſo much exhauſted, and with little manure; and they put out large branches, which keeps the land clean. Of theſe ſorts I get three buſhels, where I only get two of the others, and am always more certain of a crop; but their value nearly reduces them to the ſame as the others, for they are moſtly near one-fourth leſs in value per buſhel.

From the Scotch and Pink-eyes, if on old ploughed arable land, I get two

hundred and forty buſhels, the ſtatute acre, of ninety pounds each; from the Ox-Noble, or Cluſter Potatoe, I get three hundred and twenty buſhels, of ninety pounds each.

Now, to aſcertain the value of the land, and of manure, entirely depends on the diſtrict; but I ſay, on my farm:—

Two hundred and forty buſhels of Potatoes, at 1s. 4d. per buſhel				£.16	0 0
Rent of land, taxes, &c. per acre	£.2	5	0		
Twice ploughing, 8s. per acre	0	16	0		
Once harrowing, ditto, -	0	4	0		
Drilling, ditto, . - -	0	4	0		
Manure, 18 tons, at 6s. per ton	5	8	0		
Carting manure on the land, at 10d. per ton - - -	0	15	0		
Spreading in the drills - -	0	1	6		
Sets, 20 buſhels, at 1s. 4d. per buſhel - - - -	1	6	8		
Cutting ditto, - - -	0	2	6		
Covering ſets with the plough -	0	4	0		
Covering them a few days before coming up - - -	0	4	0		
Ploughing the drills down -	0	4	0		
Hand weeding - - -	0	2	0		
Getting up, 3d. per rod -	2	0	0		
				14	3 2
Profit clear, per acre, by Scotch and Pink-eyes				£.1	16 10

The

	£.	s.	d.
Three hundred and twenty bushels of Oxnoble or Cluster Potatoes, at 1s. per bushel,	16	0	0
Rent of land, taxes, &c. per acre, £.2 5 0			
Twice ploughing, at 8s. per acre, 0 16 0			
Once harrowing, - - 0 4 0			
Drilling, - - 0 4 0			
Manure, 12 tons, at 6s. per ton 3 12 0			
Carting manure on the land, at 10d. per ton, - - 0 10 0			
Spreading in the drills, - 0 1 6			
Sets, 20 bushels, at 1s. per bushel, 1 0 0			
Cutting ditto, - - 0 2 6			
Laying in the drills - - 0 2 6			
Covering sets with the plough 0 4 0			
Covering them a few days before coming up - - 0 4 0			
Ploughing down, - - 0 4 0			
Ditto up, - - - 0 4 0			
Hand-weeding, - - 0 2 0			
Getting Potatoes up, 3d. per rod, 2 0 0			
	11	15	6
Profit clear, per acre, by the Oxnoble and Cluster Potatoe,	£.4	4	6

If I plant on fresh land, ploughed up from a sward of grass, and a crop of oats taken the year before, the produce of the Pink-eye, &c. will mostly be three hundred and twenty bushels

buſhels per acre; the Oxnoble, &c. four hundred and eighty buſhels per acre, and with one-fourth leſs manure. All the other out-goings the ſame as the others.

	£.	s.	d.
Three hundred and twenty buſhels of Pink-eye, &c. at 1s. 4d. per buſhel, - -	21	6	8
Out-goings on ditto per acre, - -	13	5	2
Profit clear, per acre, on do. on this kind of land, £.	8	1	6
Four hundred and eighty buſhels of Oxnoble, &c. at 1s. per buſhel, - - -	24	0	0
Out-goings on ditto, per acre, -	13	5	2
Profit clear, per acre, on ditto, on this kind of land, - - - - £.	10	14	10

If they are got for a market, the expence runs high upon them, they are ſo heavy an article, and particularly when they are conveyed ten, fifteen, or twenty miles; but, when carried ſuch diſtances, the land, &c. is generally cheaper, and they often crop as well with leſs manure.

The

The drills I make are, if on old ploughed arable land, one yard; if on freſh land, thirty inches; which is for the moſt part the general practice with others. What is meant by covering them a few days before they ſhoot up, is this: there is a ſmall rib of earth left in the centre of the drill, at the time the ſets are covered with the plough when they are planted, which is divided each way with a double mould-board-plough, or a common plough. This practice is to keep the weeds down, and make the plants ſhoot out ſtronger. The ploughing them down, is when they are grown eight or twelve inches high. This is a ſmall furrow, ploughed down each way from the plants, but not ſo as to injure them, which deſtroys all the weeds but thoſe that may grow amongſt the plants, which are then pulled out by hand. In this ploughing down, they only lie three or four days, ſo as to deſtroy the weeds, if any, and then the earth is ploughed up each way again to the plants, and thrown amongſt them as much

much as poſſible, but not ſo as to injure them. When this is performed, they are finiſhed till the time of taking them up out of the land.

It is rather difficult to fix any average for the crop; for if a ſufficient rain does not fall ſoon after they have come to the ſhape of potatoes, the crop may be cut off to one half, or third, or fourth part. If they get tolerably well ſatisfied with wet at this time, they do not require much after.

Some may ſay I ſet them too thick. My mode is, for Pink-eyes, &c. ſix or ſeven inches; for the Oxnoble, &c. ſeven or eight inches diſtance from plant to plant, or ſay, from ſet to ſet. The average I obtain from this mode, is from fifteen to twenty, and ſome chance times, thirty buſhels, for one buſhel ſetting. For I find by experience, that by too thin planting I am ſubject to more miſproving crops; and when thin ſet, if they crop well, they will grow ſo large, that they will be hollow in the middle, and then they

run to water, and loſe both in their weight and quality.

Bank-Hall, Kirkdale, May 3, 1797.

The value and uſe of Potatoes on my farm, for feeding ſtock, milking-cattle, &c. will both pay and ſave at 1s. the buſhel, of ninety pounds, when the prices of corn are as follows, viz. Wheat, from 7s. to 8s. the buſhel, of ſeventy pounds; Barley, from 4s. to 4s. 6d. the buſhel, of ſixty pounds; and Oats, from 2s. 4d. to 2s. 10d. the buſhel, of forty-five pounds. Potatoes, either for feeding ſtock, or milking, fifteen pounds, given raw, with one pound and a half of corn, either ground or boiled, is equal to ſix pounds of corn.

			£.	s.	d.
I ſay, keep for one week, two feeds per day, is					
84lbs. of corn, at 4s. per buſhel, of 60lbs.			0	5	7
Two buſhels and 30lbs. of potatoes,	s.	d.			
for one week, at 1s. per buſhel,	2	4			
Twenty-one pounds of corn, at 4s. per					
buſhel, of 60lbs. - -	1	$4\frac{3}{4}$			
			0	3	$8\frac{3}{4}$
Balance in favour of Potatoes and Corn for one					
week, - - - - -			0	1	$10\frac{1}{4}$

Feeding Pigs, either for Fat or for Pork, with Potatoes and Flour.

Eight pounds of Potatoes and one pound of Flour are equal to four pounds of either meal or flour; but as in feeding of pigs there is ſuch an uncertainty in their eating, I ſay, one buſhel of Potatoes, and eleven pounds of Flour, are equal to forty-four pounds of Flour, at four ſhillings per buſhel, of 60lb. weight, - - - s. d. £.0 3 0¼

One buſhel of Potatoes, -	1 0	
Eleven pounds of Flour, at 4s. per buſhel, of 60lb. - - -	0 9	
To ſteaming or boiling the Potatoes	0 3	
		0 2 0

Balance in favour of Potatoes and Flour, &c. in feeding pigs, by one buſhel of Potatoes, and eleven pounds of Flour, - £.0 1 0¼

N. B. When I feed either beaſts or pigs with Flour and Potatoes, after ſome time at the firſt, when they have been well fed, they will abate in their eating; and when this is perceived, I then take all the hull or bran out of the flour, as it is then of no uſe either to beaſt or pig; but if kept in, will prolong their time of feeding and making up to fat in the inſide: for when it is taken out,

out, they will both make up better, and in nearly one half of the time that they would if the hull or bran of the corn was not taken out; and when taken out, it is uſeful for many other good purpoſes, ſuch as feeding ſtock almoſt of any kind, keeping dogs, &c. Eight ounces of Potatoes, and one ounce of meal, are equal to four ounces of meal. I ſay, the keep of a dog for one week:

To 5lb. 4 oz. of Meal, at 2d. per lb. -	£.0	0	10½	
To 10lb. 8 oz. of Potatoes, at 1s. per buſhel, of 90lb. -	0	0	1½	
To boiling, &c. - -	0	0	2	
To 1lb. 5 oz. of Meal, at 2d. per lb. - - -	0	0	2½	
			0	0 6
Balance in favour of Potatoes and Meal for the keep of a dog one week, - -	£.0	0	4½	

There is more profit in feeding geeſe, turkeys, and fowls of every ſort, with Potatoes and meal, mixed, as for dogs, than there is by the keep of dogs: they will feed fatter, and in nearly one half of the time that they will with any kind of corn, or even meal

meal by itſelf. Potatoes that are either broiled or ſteamed, as ſoon as they are done muſt be bruiſed ſmall while they are hot; for if they are ſuffered to grow cold, they will not bruiſe ſo ſmall; and the finer they are made, the better they are; and they muſt either be ſteamed or boiled freſh every day; and the quantity of flour or meal that is to be put to the Potatoes muſt not be put to them till they are going to be given for feed.

Potatoes, either boiled or ſteamed, or given raw, according to the mixture given with them, pay equally as well for cart or plough horſes, as they do for cattle, &c. and are of the ſame value for that uſe on my farm.

The aforeſaid experiments are what I have practiſed on my farm, therefore I can aſſert the report here ſtated to be true: it is from real practice, and not from imaginary theory.

Any gentleman or farmer, &c. that may think theſe remarks worthy of notice, muſt

take

take care that the mixtures are all regularly executed; for if they are not, property will be waſted, and the ſtock, let it be of whatever kind it may, will be going backward, and the time prolonged, and attended with three times the expence, and you become diſappointed; and then all is condemned, which is often through the neglect of ſervants, &c. and particularly when it is attended with a little more trouble.

Stock, whether for feeding or milking, never do all years alike with me, although their keep be the ſame, both of graſs and houſe-feeding: therefore, if I try any freſh experiment, I never condemn it for miſproving one year; for, if I think there is any proſpect, I try it again, if on ever ſo ſmall a ſcale; for every thing ſhould have a fair chance, before it is laid aſide.

I do not confine myſelf to the Potatoe culture for the uſe of ſtock alone; I grow Turneps in great perfection, which I moſtly draw off the land; and I find, that both

 together,

together, they anſwer better than all of either Turneps or Potatoes; but Potatoes I can keep for the uſe of green crop all the ſpring, and even to Midſummer if I had occaſion for them.

Some people are of opinion that Potatoes exhauſt the land more than Turneps, but my ideas differ; for if the potatoe land was to be laid dry, and lie ſo for the winter after the crop is taken off the land, it would be equal to turnep land, for any ſpring crop that the land would bear; but is moſtly ſown with wheat, let the ſeaſon turn out ever ſo bad, and, by being ſown in bad condition, it moſtly leaves the land foul. If it happens to be a bad ſowing ſeaſon with me, I never ſow my potatoe land with wheat, but leave it dry, and let it lie for the winter, and it is always in excellent order for any early ſpring crop, ſuch as the land will bear.

My remarks on my former Papers anſwer my expectation in every reſpect: that on ſalting hay, turns out to great advantage; that

that on ſtraw, for manure, will pay any gentleman or farmer to purchaſe ſtraw for his farm, at 2½d. the ſtone of twenty pounds, to make into manure on his farm, better than carrying it to market, either for mixing compoſts, or mixing with other manure, particularly where you have reſervoir water. That on the compoſt which was ſet on the graſs land, now is as forward, and appears to be as promiſing for a crop of hay-graſs, as where the real manure was ſet.

I remain,

My Lords and Gentlemen of the
Honourable Society,

Your obedient humble ſervant,

HENRY HARPER.

N. B. I have dibbled Wheat this laſt ſowing ſeaſon, but on a ſmaller ſcale; and I have ſet ſome that is tranſplanted; but it appears to me that the expence attending it will over-balance any ſaving of ſeed, &c.

Drilling and hoeing, on thin light ſoils, will, in my opinion, anſwer better by one third more in the crop than the broad-caſt. I have drilled nearly one half of my Wheat, now growing on both ſtrong heavy ſoils, and light, thin, ſandy ſoils, &c.

The

The GOLD MEDAL, or THIRTY GUINEAS, at the option of the Candidate, being the Premium offered for cultivating the True RHUBARB, was this Seſſion adjudged to Mr. THOMAS JONES, of Fiſh-ſtreet-hill, from whom the following Papers were received.

Mr. JONES made choice of the pecuniary Reward.

SIR,

IF ever the cultivation of Rhubarb in this kingdom becomes ſo extenſive as to ſuperſede the neceſſity of its importation; to the Society for the promotion of Arts, Manufactures, and Commerce, will the community be indebted for an advantage, the magnitude and importance of which cannot be too highly appreciated. From whatever cauſe, which it is unneceſſary here to inveſtigate, certain it is the conſumption of this valuable

drug is increaſed, and continues to do ſo to a very great degree. All calculation, from a variety of circumſtances, muſt be vague; but I do not think Sir William Fordyce, in ſpeaking of the value of the importation, is much miſtaken, when he eſtimates the annual amount at £.200,000 ſterling. Whether this ſtatement is true to the extent or not, how forcibly it muſt ſtrike to the conviction of every one, and how much to be lamented, that a country like England, whoſe commercial conſequence is ſolely dependent on the induſtry of its inhabitants, and the productions of its ſoil, ſhould be indebted to other climates, and other ſoils, for that which, I am more than ever perſuaded, is congenial to its own!

The Society, feeling all the force of this obſervation, have endeavoured, for a conſiderable period, to promote a remedy; and every attentive obſerver cannot fail being impreſſed with the wiſdom and prudence that have governed their conduct.

Till the fact was rendered ſo indiſputable

as

as to defy all controverſy, inſtead of ſtimulating the ſpeculative to undertakings, moſt certainly very expenſive, and after all of doubtful benefit, they firſt confined themſelves within ſuch a limit, as that the requiſition apppeared more like an experiment than any thing elſe. In time, certain claimants, preferring their different pretenſions, eſtabliſhed by actual experiment the practicability of the meaſure; and hence, with a perſeverance and liberality that will ever redound to their honour, they now ſtipulate for more extenſive performances, and, beſides their honorary GOLD MEDAL, offer this year a handſome pecuniary reward, at the option of the claimant.

It would ſeem too much like affectation, were I, on the preſent occaſion, to diſclaim every idea of pride; I freely confeſs the repeated favours of ſuch an Inſtitution, and that perhaps I may have been, in ſome meaſure, inſtrumental in forwarding its patriotic deſigns, are conſiderations calculated to influence a mind leſs ſuſceptible of vanity

than I apprehend mine to be. Yes, Sir, in ſending you the encloſed certificate I cannot reſtrain my feelings: I do experience a conſiderable degree of pride as well as pleaſure, being conſcious of having fulfilled my pledge to the Society, and entertaining the flattering hope of being again honoured with its approbation.

I have heard it aſked, that as the advantages have been repreſented as ſo apparent, whence is it that the cultivators of Rhubarb are not more numerous, and how it happens that an object of ſuch obvious benefit ſhould ſtand in need of any farther encouragement?

Theſe queſtions will require no anſwer, when it is recollected that, however inviting the advantages may be, their diſtance alone is enough to operate as an almoſt inſurmountable obſtacle to a general cultivation; but the more ſo, when it is further conſidered, that after all they are not quite ſo certain as the projector may flatter himſelf.

To

To influence therefore the generality, and particularly thoſe claſſes (who muſt be engaged in this undertaking to produce all the effect we deſire, more eſpecially as in the preſent caſe, where the return cannot be either prompt or ſpeedy) to deviate from their ordinary habits and purſuits, ſuch a ſyſtem of rewards muſt be adopted as to ſuit the general diſpoſition. It was, I dare ſay, this conſideration that induced the varied meaſure of the Society already alluded to. They ſeem to have taken up the matter with the earneſtneſs it deſerves; and under their countenance I will venture to predict the beſt conſequences. As the ſubject continues to be inveſtigated, the difficulties will neceſſarily ſubſide; and the profits being rendered more ſecure, the undertaking will become ſufficiently lucrative not to require any additional incitement.

The prevailing prejudice for foreign commodities, ſeems to me to be of infinitely more conſequence than any obſtacle that can impede its general cultivation; but

even

even this, ſtrong and powerful as it is, ſelf-intereſt will overcome; and if the cultivator is circumſpect, and as much as poſſible endeavours to give Britiſh Rhubarb the appearance of the foreign, and at the ſame time moderates his pecuniary expectations, there can be little danger of its riſing in the public eſtimation. I purpoſely omit noticing here its medicinal qualities, as, from the general teſtimony, they are not likely to be queſtioned; all accounts agreeing that Rhubarb, ſo cultivated as to arrive at ſix or ſeven years growth, and properly cured, will poſſeſs all the virtues the moſt ſanguine can deſire.*

In

* In corroboration of this ſtatement, and under the conviction how much gratification it will afford the Society, inaſmuch as it is a proof that in their endeavours to promote the public advantage they will receive co-operation from other reſpectable inſtitutions, I am induced to mention a circumſtance that has occurred within theſe few days.—At the inſtigation of Alexander Champion, Eſq. one of the Governors, I ſent ſeveral pounds of Britiſh Rhubarb to Guy's Hoſpital, for their examination and trial. I have ſince had the honour of an interview with the phyſicians of that hoſpital, upon the

In this place it will be proper to notice what I cannot help conſidering as very material: it is, that, without a perſevering attention throughout, the ſkill of the curer will be exerted to very little purpoſe; as I conceive all the difficulties to ariſe principally, if not entirely, from want of care and circumſpection in the cultivator. In other words, at a proper age it will have acquired a certain degree of woodineſs and ſolidity, that will be found greatly to facilitate this laſt operation: indeed, I begin to ſuſpect this to be the whole of the ſecret. Unfortunately, ſuch is the natural ſucculency of this plant, and its liableneſs to decay, as to require an unremitting aſſiduity to prevent the one, in

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ſubject, and embraced that opportunity for preſenting them other and improved ſpecimens. I cannot deſcribe the pleaſure I experience, while I add, that they were unanimous in their expreſſions of approbation and reſpect, and were pleaſed to give me an order for as much as, from the ſtate of my plantation, I was enabled to execute, as an encouragement for what they politely entitled my meritorious perſeverance and exertions.

in its progreſs towards the other. But as, in my former letters, I laid peculiar ſtreſs upon this point whenever it came under conſideration, and having noticed it hereafter, it becomes unneceſſary here to ſay more, than that perſons will find themſelves miſerably deceived, if, when the plantation is completed, they imagine nothing more to be done than to wait the harveſt. In the ſame letters, my method of culture being ſo minutely deſcribed (a method that poſſeſſes no other recommendation than ſimplicity), I ſhall paſs it over for the ſame reaſon; and, in the further proſecution of this ſubject, avoiding repetition as much as is conſiſtent with plainneſs, ſhall content myſelf with laying before the Society a few general hints, which, being the reſult of actual obſervation, may perhaps prove uſeful to future cultivators.

Firſt.—In the choice of a ſituation, I do not think the aſpect very material, provided it is not ſhaded too much on the ſouth or weſt; but it muſt be obvious, the ſmaller

number of ſurrounding trees the better, as the roots of the one may naturally be expected to interfere with thoſe of the other. The indiſpenſable points are the depth and good quality of the ſoil; and if, with theſe advantages, the plantation can be placed in a gentle declivity, ſuch a ſituation may be ſaid to be very eligible.

Secondly.—If the ground to be converted to this purpoſe is a greenſward, no time will be really loſt by a little delay. Suffer a ſeaſon or two to elapſe before the plantation is attempted, that the turf may be entirely decayed, the ſoil in general more ameliorated, and, what is of more conſequence than theſe, the wire-worms, which always infeſt old graſs land, more completely deſtroyed. Many thouſand plants I had the misfortune to loſe from the depredations of this inſect only; and it will be found, that even rats, mice, and moles, are not ſo much to be dreaded as theſe pernicious creatures.

Thirdly.—I would recommend every one, if they can, to ſow liberally (I do not mean a large

a large quantity of ſeed upon a ſmall piece of ground, but the contrary); and as it is impoſſible to foretell what devaſtation may happen, from an unuſually wet or ſevere winter, or any other cauſe, never let a ſeaſon be omitted, leſt a ſupply ſhould fail, and a ſucceſſion be loſt.

Provided the weather is open, the beſt period is the latter end of February, or the beginning of March, for this purpoſe; and if the ſeed ſhould not vegetate in three weeks, let the ſowings be repeated till they do. In cold ſoils a moderate hot-bed will be ſometimes required, but very ſeldom, and ought never to be uſed but when abſolutely neceſſary; for thoſe plants will be found the ſtrongeſt that are raiſed in the open ground. I prefer ſowing in the broad-caſt method, rather than in drills.

Fourthly.—The nurſery-bed to which the plants are to be transferred when at their proper ſize, and which comes next to be mentioned, muſt be diligently attended to. If any one ſhould ever conſult this Paper

with

with the hope of information, let me aſſure the enquirer that more depends upon this circumſtance than at firſt may be imagined; for, ſtrange as it may ſeem, it is no leſs ſo than true, the future ſucceſs of a plant may be dated from its improvement in the nurſery-bed: hence the pains we beſtow upon them by conſtant waterings (for now they can ſcarcely have too much, if the weather is warm), and protecting them from the ravages of ſlugs and other inſects, in their preſent ſtage, will be amply repaid us. I have known roots that have thriven well now, arrive in three years to an equal ſize with others that have not ſucceeded ſo well at the end of five. On this account, taking it for granted that the preceding hint reſpecting the dimenſions of the ſeed-bed will be attended to, and as a great many will occupy but a ſmall ſpace, being no more than ſix or eight inches apart, I recommend every one likewiſe to plant as freely as they can; and, whenever a plantation is to be formed, or a vacancy filled up, to be ſure that the

fineſt and moſt thrifty plants are ſelected. I never recollect a ſingle inſtance of a plant ſucceeding, when it had loſt its principal bud.

Fifthly.—Where a plantation does not poſſeſs the natural advantage of being on a declivity, narrower beds, and deepened trenches, are among the artificial means that ſhould be adopted; but all ſituations will require a greater or leſs proportion of care, to prevent the ill effects of water remaining on the crowns of the plants; therefore, when the ſeed-ſtalks are cut off, which ought always to be done immediately upon the withering of the radical leaves, they ſhould be covered with mould, in the form of an hillock. This proceſs will anſwer two good purpoſes, that of throwing off the rains, and the trenches, by ſupplying the material, will always be kept well open.

Sixthly.—To obtain good merchantable Rhubarb, at every opportunity I have ſpared no pains to enforce the abſolute neceſſity of age, to diſcover the cauſe of its ſo frequent failure,

failure, in its progreſs towards it, and to point out the means of prevention. That the former is an eſſential will appear the more clearly, when I add, that till the plants have blown, their medical virtues ſcarcely come into exiſtence; and the latter will appear equally eſſential, when I further add, that at the ſame period the danger of decay commences likewiſe. Whoever attentively examines the growth of theſe roots, will perceive that their buds poſſeſs the double capacity, of ſerving firſt as their natural defence, and afterwards even aſſiſting in their deſtruction. When one or more of theſe buds have bloomed, a cavity is formed in the centre of the plant, ſurrounded by the reſt, into which the rain, if permitted, will make a lodgment, to the inevitable deſtruction of thoſe parts that, on this account, year after year, become unprotected.

Thoſe portions of the crown whence the ſeed-ſtalks ariſe, prove ever the moſt valuable; and every ſucceeding year pro-

ducing other ſeed-ſtalks, would add to the ſtock of uſeful root, if experience did not tell us, that hitherto the latter have increaſed no faſter than the former have been diminiſhed. Thus I have ſeen much ſurpriſe expreſſed in letters tranſmitted to the Society upon this ſubject, that upon taking up roots of ſeven or more years old the greateſt quantity ſhould be good for nothing; and as the cauſe has never been reflected on, the only remedy the authors have ventured to recommend, is a more early removal, not being aware that this meaſure is at once deſtructive of all the beneficial conſequences of age.

Laſtly—Notwithſtanding our utmoſt care, it muſt not be expected that ſucceſs will attend us in every inſtance; for this reaſon, every ſpring and autumn the plants ſhould undergo a general examination. The young ones will preſently diſcover their real ſituation, for either their leaves will wither as faſt as they are produced, or their growth will become ſtunted: but with regard to

the older ones, or thoſe that have blown, as in moſt caſes there will be found enough ſound root to produce a very luxuriant foliage, their ſtate can only be diſcovered by preſſing a finger into the centre of the crown; the leaſt unſoundneſs will ſoon be perceptible by this means.

In both theſe caſes I recommend the removal of the plants, and the vacancies occupied with others; for in the former much time will be ſaved, and the bad ſituation of the latter, by remaining, will only be aggravated, while it furniſhes the cultivator with an opportunity of examining into the occaſion of the ſeveral defects, and may lead to future prevention.

Thus, Sir, I have ſaid for the preſent, in a general way, every thing very material that the ſubject ſuggeſts: ſhould any one be deſirous of more particular information, I beg leave to refer him to the volumes of the Society's Tranſactions. A ſyſtem of culture is recommended in that of laſt year, I hope not the leſs effective for being ſimple;

and although its deſcription may be thought rather prolix by the general reader, yet perhaps not unneceſſarily ſo by the inquiſitive.

It therefore only remains for me to add a few words reſpecting my own plantation. The accompanying certificate, which I truſt is perfectly regular, will inform the Society, that in the year 1797 I have added 3040 to my former number, making an aggregate of nearly 5000 plants. The method I purſued was exactly that already referred to; and after this ſecond and more extenſive trial I confeſs myſelf unable to propoſe a better.

With this you will likewiſe receive a ſmall quantity of cured Rhubarb, being a part of the produce of my plantation, commenced under the auſpices of the Society in the year 1792; and I believe, conſidering its age, it equals any they may hitherto have ſeen. My only motive for this, is a deſire to offer ſome kind of proof in ſupport of my pretenſions to perſeverance. I hope I may be

permitted to ſend for it again, as it is all I have left, without a poſſibility of obtaining more till the next ſeaſon.

In concluſion, Sir, I can only repeat my former ſentiments, that the approbation of a Society, whoſe every object is for this public advantage, muſt reflect credit upon every individual who is fortunate enough to be ſo diſtinguiſhed. I have been ſo happy; and I take the opportunity to ſay, that this circumſtance I ſhall conſider, to the lateſt period of my life, as honourable in the greateſt degree; at the ſame time I flatter myſelf the Society will do me the juſtice to believe, that each repeated inſtance of their favour I eſteem as ſo many obligations to further and more important exertions. To yourſelf, Sir, I feel myſelf indebted for much politeneſs and attention on all occaſions: I hope you will accept my warmeſt acknowledgments, and the aſſurance that

I remain
Your much obliged
and very humble ſervant,

Mr. More. Thomas Jones.

Fiſh-ſtreet-hill, February 13, 1798.

THIS is to certify, that Mr. Thomas Jones, of Fiſh-Street Hill, London, has raiſed and planted, in the year one thouſand ſeven hundred and ninety ſeven, at four feet aſunder, three thouſand and forty plants of Rheum Palmatum, or True Rhubarb, in a piece of ground which he rents of me on Fourtree-Hill, in the pariſh of Enfield, and that they are in a thriving condition.

WILLIAM SHAW.

Fourtree-Hill, Feb. 10, 1798.

SIR,

I WAS duly favoured with yours of the 13th inſtant, and beg you will be ſo good as to inform the Committee of Agriculture, that I ſigned Mr. Jones's Certificate relative to his claim for Rhubarb. The plants were in a very thriving ſtate laſt ſummer, and the very few plants that failed were made good by freſh ones laſt autumn; ſo that the plantation is complete, and perhaps the moſt healthy in England.

I believe

I believe no one in this country pays more attention to the culture of Rhubarb than Mr. Jones. He has now many thouſand ſeed-bed plants; and the moment any one of thoſe tranſplanted ſeem to decay, it is replaced by a freſh plant.

I am, SIR,

Your very humble ſervant,

WILLIAM SHAW.

Fourtree-Hill, March 16, 1798.

SAMUEL MORE, Eſq. Secretary.

The GOLD MEDAL, or the SILVER MEDAL and TWENTY GUINEAS, at the option of the Candidate, being the Premium offered for the IMPROVEMENT of WASTE LAND, was this Seſſion adjudged to JOHN PEART, Eſq. of Settle, in Craven, from whom the following Accounts and Certificates were received, and who made choice of the SILVER MEDAL and TWENTY GUINEAS.

SIR,

I HAVE ſent by this day's poſt Certificates of Improvement of fifty-ſix acres three roods twenty-three perches of Waſte Land, to James Lambert, Eſq. of Hatton Garden, which I have requeſted him to lay before the Committee on Tueſday next; and if the Committee think the improvements therein ſtated deſerving of a Premium, you will have the goodneſs to ſtate to me their reſolutions

reſolutions upon theſe Certificates, and deliver any Premium they may adjudge to Mr. Lambert on my account.

I have alſo taken the liberty to ſtate to the Committee the money I have lately laid out in the cultivation and improvement of land, which, though it may not come within the deſcription of Waſte, yet previous to its improvement was not of more than ſeven ſhillings an acre in annual value; and, in the courſe of two years, I am of opinion it will be better worth twenty ſhillings an acre, per annum, than it was worth ſeven ſhillings per annum before its improvement.—The improvement in the ground mentioned in the Certificates is in too cold a climate for corn; but I doubt not the grounds limed and drained, and alſo thoſe ploughed or pared, and ſown with graſs ſeeds, will, in the courſe of two years, fatten any ſort of cattle.

It has always appeared to me, that little attention has yet been paid to the improvement and cultivation of paſture ground in this

this kingdom, in compariſon to the ploughing land; and I doubt not but the preſent paſture land in the kingdom may be made to keep at leaſt one third more ſtock of cattle, and alſo keep them much better than they are now kept. Paſture land within theſe laſt ſeven years is much increaſed in value, therefore it now becomes more profitable to a proprietor to improve that ſort of land.—Good and fine graſs will grow in almoſt the higheſt climates in this kingdom. I have now a part which, ſeven years ago, was covered with ling, and now grows very fine herbage, and will fatten any ſort of cattle; and I doubt not, the improvements ſtated will pay ſeven per cent. for which I have my own land as ſecurity.

The improvements ſtated in the Certificates have altogether coſt me 834l. 16s. 9d. and nearly the whole expended in the laſt two years, and chiefly in labour. You will have the goodneſs to ſtate this letter and the Certificates to the Committee; and I hope the improvements are upon ſuch a ſcale, and

and of ſuch conſequence to ſociety, that the Committee will adjudge me a Premium.

I am now going on with other improvements in the ſame way, and on an extenſive ſcale, having purchaſed a large quantity of land, at preſent very bad, which I hope to make good.

I ſhall be glad to be favoured from you with the determinations of the Committee upon my Certificates as ſoon as they have given them their conſideration.

I remain, SIR,

Your very humble ſervant,

JOHN PEART.

Settle, Dec. 7, 1797.

Mr. MORE.

A CERTIFICATE *of* IMPROVEMENT OF LANDS, *lying waſte upon two Parcels of Ground, called the* Braa *and* Middle Bar, *part of an Eſtate called* Beecroft-Hall, *ſituate near* Horton, *in the Pariſh of* Horton, *in* Ribbleſdale, *in the County of* York, *between the 1ſt of March, 1796, and the 22d of November, 1797; and an Account of the Expence attending ſuch Improvement.*

	£.	s.	d.
Paid Richard Hird for ploughing 18 acres 22 perches of ground on the Braa, at 20s. per acre, - - - - -	8	2	9
Paid Jonathan Bracewell and partner for paring or puſh-ploughing 10 acres 3 roods 6 perches on the Middle Bar, at 16s. per acre,	8	12	6
Paid——Hey for paring or puſh-ploughing 4 acres on the Middle Bar, at 16s. per acre,	3	4	0
Paid ſeveral farmers in the neighbourhood for 1279 pecks of dreſſed hay-ſeeds (each peck containing two Wincheſter pecks), which have been ſowed on the above pared and ploughed ground: part coſt 1½d. and the remainder 2d. per peck, - -	9	4	5
Paid for building a lime-kiln on the Braa part,	10	0	0
Paid William Moor and partner for 3600 loads of lime (each load containing three Win-			
	£. 49	3	5

	£.	s.	d.
Brought over,	49	3	5
cheſter buſhels) which have been laid on the above pared and ploughed ground,	97	10	0
Paid ditto for 1000 loads of lime which have been laid upon ten acres of ſward in the Braa, at 6½d. - - - -	26	1	8
Paid Richard Morſitt for loading the above 4600 loads of lime, at 1½d. - -	28	15	0
Paid Shepherd, Hudſons, and Co. for making 102 roods of ſtone wall, 2 yards high, each rood containing 7 yards in length, at 6s. per rood, - - -	30	12	0
	£.232	2	1

The ground above mentioned, previous to its improvement, produced only ling, and a ſtrong ſpungy moſs, except the ten acres of ſward, which produced a ſtrong tough white bent. The ſoil of the pared and ploughed ground conſiſts of about eight inches of black turf earth, and underneath a brown, mixed with gravel and clay. The ſoil of the limed ſward is about four inches of black earth, and underneath brown hazle mould. The pared and ploughed ground, in its original ſtate, appeared to be wet, but the proprietor finds it was only top

water

water retained by the moſs; and now that the ſurface is broke, it will require no draining. The beſt method of managing this ſort of ground (of which there are many thouſands of acres in this kingdom) is to pare or plough it in the autumn, ſow it with the common graſs ſeeds of the country in June following, about forty pecks to an acre; then lay the lime in heaps from the kiln, each heap containing ſix pecks, and the heaps ſeven yards from each other; when the lime has laid about two months, ſpread it upon the ſeeds, which by that time will have taken root. All cattle ſhould be kept off the ground for two years, and the third year it will fatten cattle, particularly ſheep, moſt wonderfully, and will in that time become a ſolid firm ſward. The proprietor can ſpeak with great confidence of the ſucceſs of this mode of management and improvement of land, as he, about ſeven years ago, pared about twenty acres of ling ground, of the ſame quality as the Braa and Middle Bar, on a paſture at Graffington, awarded to him under an act of parliament for diviſion of ſome

ſtinted

ſtinted paſtures there: it was ſown with graſs ſeeds, and then limed in the manner before mentioned. This ground, which was ſeven years ago covered with ling, and on which the proprietor has frequently ſhot grouſe, is now fine paſture land, and will fatten any ſort of cattle. The paring of the ground is done nearly in the ſame way as land pared for corn. The proprietor does not burn the parings; they are juſt turned over, and left to rot in that ſtate on the ground. By way of experiment on the land at Graſſington, he ſet fire to, and burnt part of the parings as they lay upon the ground; but he does not now find any difference between the ground where the parings were burnt, and that where they were left to rot upon the ground. The proprietor never ploughed any of this ſort of ground before; he ploughed the ground by way of experiment, to find out whether paring or ploughing anſwers better: he is inclined to think there will not be much difference. If the ground be inclined to wet, perhaps making furrows may keep it dryer, and in

that

that reſpect be preferable. The climate of the Braa and Middle Bar is too high for corn; it would grow there, and be a very productive crop, but it would not ripen. The graſs-ſeeds are now in a flouriſhing ſtate. The proprietor is well ſituated for getting lime at a ſmall expence, which in this mode of improvement is a great object, as lime is the greateſt expence. The coals for burning lime are not near the ground improved, and there is plenty of lime rock in almoſt every part of the eſtate.

I GEORGE HOLDEN, Miniſter of the church of Horton, in Ribbleſdale, do hereby certify, that I reſide near to the eſtate called Beecroft-Hall; that I know John Peart, the owner thereof, and believe the account of expences ſtated by him in his account is true; as witneſs my hand, this fourth day of December, 1797,

GEORGE HOLDEN.

Witneſs to the ſigning hereof by George Holden, WILLIAM MOOR.

A CERTIFICATE *of* IMPROVEMENT *of* LANDS *lying waſte upon a Parcel of Ground called* Scoutber, *ſituate within* Rathmel, *in the Pariſh of* Giggleſwick, *in the County of York, between the firſt of January,* 1796, *and the firſt of January,* 1797; *and an Account of Expences attending ſuch Improvement.*

	£.	s.	d.
Paid Francis Tomlinſon and John Robinſon for graving 13 acres 3 roods 35 perches, at 3l. per cuſtomary acre, on Scoultber -	25	0	0
Paid Edward Brown and James Tomlinſon for 950 loads of lime, each load containing three Wincheſter buſhels, laid on the above graven ground, at 1s. 4d. per load -	63	6	8
Paid John Towers for 60 roods of wall fence, on Scoultber, two yards high, each rood 7 yards in length, at 4s. 6d. per rood -	13	10	0
£.	101	16	8

The above-mentioned piece of ground, before it was graved, produced only ſtrong ling: the ſoil conſiſts chiefly of about twelve inches of turbary, and, under that, gravel or

ſtone. The ground was ſtony, and could not be ploughed or pared. The ſtones that were looſe were got out for fencing. The proprietor has ſown about one third part of the above parcel of ground with graſs-ſeeds; and, by way of experiment, he has it in contemplation to leave the reſt to ſwarth, without ſowing ſeeds on it, in order to diſcover the difference. The proprietor has not much expectation of this improvement anſwering great profit to himſelf, by reaſon of the lime being ſo very expenſive, and the ſoil being of bad quality, being much lighter than the ſoils mentioned in the annexed Certificate.

I, JOHN PEART, of Settle, in the county of York, Gentleman, do hereby certify to the Society inſtituted in London for the Encouragement of Arts, Manufactures, and Commerce, that the account of expences (amounting together to the ſum of 101l. 16s. 8d.) mentioned for the improvement of a parcel of ground, called Scoultber,

in

in Rathmel, in the parish of Giggleswick, in the county of York, of which I am the proprietor, is in every respect true and just. Given under my hand, this sixth day of December, 1797,

JOHN PEART.

I, THE Reverend JOHN CLAPHAM, Vicar of Giggleswick, do hereby certify, that I believe the above-mentioned Certificate, signed by John Peart, is true. Given under my hand, this sixth day of December, 1797,

JOHN CLAPHAM.

CERTIFICATE *of the Expence of Improvements made on an Eſtate called* Beecroſt-Hall, *ſituate at* Horton, *in* Ribbleſdale, *in the County of* York, *belonging to* John Peart, *of* Settle, *Gentleman; the whole of which Improvements have been done between the* 12*th of February*, 1796, *and the* 22*d of November*, 1797, *excluſive of the Works done on the Waſte Lands mentioned in the Certificate herewith ſent.*

	£.	s.	d.
Paid Richard Morfitt for making 29½ roods of fence, 7 yards to the rood, being ſtone wall, 2 yards high, in a field called Old Cloſe, belonging to Beecroft-Hall, -	8	17	0
Paid Thomas Clapham and partner for cutting, walling, and filling, 328 roods (7 yards to the rood) and 4 yards of draining in a paſture called the Mires, belonging to Beecroft-Hall, at 9d. per rood, and 1l. 1s. over	20	17	0
Paid Richard Morfitt for getting and leading ſtones for the above 328 roods, at 9d. per rood, - - - - -	19	16	0
Paid Richard Morfitt for making 71 roods of ſtone wall, 2 yards high, in the Mires, at 5s. 6d. per rood, - -	19	14	0
Paid Richard Clapham and Richard Morfitt for cutting, walling, filling, getting, and			
	£.69	4	0

	£.	s.	d.
Brought over -	69	4	0
leading ſtones, for 168 roods of drains in ſaid paſture, at 1s. 6d per rood, -	12	12	0
Paid Joſeph Redman and ditto for 112½ roods in ditto, at 1s. 6d. - -	8	8	4
Paid John Morfitt and ditto for 121 roods of drains finiſhing, at 1s. 6d. per rood, -	9	1	6
Paid John Heſleton and partner for 3342 loads of lime, each load containing three Wincheſter buſhels, laid upon the Mires, at 6½d. per load, - - -	90	11	0
Paid John Morfitt for cutting, filling, and walling, 197 roods of drains on the Mires, at 9d. per rood, and 1l. 1s. over - -	8	8	9
Paid Shepherd for cutting, walling, and filling, 363 roods of drains, in a meadow belonging to Beecroft-Hall eſtate, called the Eight Acres, at 9d. per rood, and 1l. 1s. over, - - - - -	15	2	6
Paid Thomas and Richard Clapham for cutting, walling, and filling, 720 roods of draining in the Mires, at 9d. per rood, and 2l. 2s. over, - - - - -	29	2	0
Paid Edmund Morfitt for getting and leading ſtones for the above 197 roods, by J. Morfitt, at 9d. per rood, - -	7	7	9
Ditto, ditto, for ditto, for the above 720 roods, by Thomas and Richard Clapham, at 9d. per rood, - - - -	27	0	0
Carried over	£. 276	17	10

	£.	s.	d.
Brought over, -	276	17	10
Paid Edmund Morfitt for the above 363 roods, by Shepherd, being farther to lead, -	18	3	0
Paid Richard Morfitt for making 20 roods of ſtone wall, in the Mires, 2 yards high, at 5s. 6d. per rood, - - -	5	10	0
Ditto Hudſon, Clapham, and Co. for making 65 roods of ſtone wall, 2 yards high, between the Mires and Eight Acres, at 7s. 2d. per rood, - - -	23	5	10
	£.323	16	8

The above ſum of 323l. 16s. 8d. has been expended by Mr. John Peart, the proprietor, in the improvement of about forty acres of ground. Before it was drained it produced chiefly ruſhes, and was of very ſmall annual value, and conſtantly wet and marſhy. The ſoil conſiſts of about twelve inches of black earth, inclined to turbary, and underneath that a ſtiff marly clay. The drains were hired to be cut a yard deep, and to be twenty inches wide at the bottom: they are walled on each ſide about eight inches high, and then covered with a ſtone.

Where

Where ſtones are to be had at a moderate expence, the proprietor thinks ſtone drains much preferable to thoſe covered with ſods; and though the expence (even where ſtones are near) is nearly four times the expence to the proprietor, yet he thinks it more profitable than ſod drains, particularly in paſture ground. In that part of the above-mentioned ground which was firſt drained, the ruſhes were this year much weaker, and the proprietor doubts not but in a few years they will entirely diſappear; and he believes that this ground will, after next year, be cheaper to a farmer at twenty ſhillings an acre per annum, that it was at ſeven ſhillings before the improvements:

I, JOHN PEART, of Settle, in the county of York, Gentleman, do hereby certify and declare to the Society inſtituted at London for the Encouragement of Arts, Manufactures, and Commerce, that the certificate expences for the improvement of two parcels of ground, called the Mires, and Eight Acres, parcel of an eſtate called

Beecroft-Hall, of which I am proprietor, is true; and that the ſum of three hundred and twenty-three pounds ſixteen ſhillings and eight pence, mentioned in ſuch certificate, as the total amount of expences paid by me for the improvements in the ſaid eſtate, hath been actually and *bonâ fide* expended and paid by me for ſuch improvements. Given under my hand, this 30th day of November, 1797, JOHN PEART.

Witneſs to the ſigning hereof by John Peart, LEONARD WILKINSON.

I, GEORGE HOLDEN, Miniſter of the church of Horton, in Ribbleſdale, do hereby certify, that I reſide near to the eſtate called Beecroft-Hall; that I know John Peart, the owner thereof; and believe the account of expences mentioned, and alſo the Certificate ſigned by John Peart, is true. Witneſs my hand, this 4th day of December, 1797, GEORGE HOLDEN.

Witneſs to the ſigning hereof by George Holden, WILLIAM MOOR.

CERTIFICATE *of the Expence of Improvements made by* JOHN PEART, *of* Settle, *Gentleman, on an Eſtate in* Rathmel, *in the Pariſh of* Giggleſwick, *his Property, between the firſt of November*, 1794, *and the firſt of November*, 1797.

	£.	s.	d.
Paid John Monk, for cutting, walling, filling, getting ſtones for, and finiſhing, ſeventy-one roods of drains, in a parcel of ground called Wogdens - - - - -	5	5	0
Paid Houghton and Cook for ditto (four hundred and ſixty-nine roods of drains), at 1s. 7d. per rood, in ditto - - -	37	2	6
Ditto John Towers, for making 107 roods of fence in ditto, at 5s. per rood -	26	15	0
Ditto Edmund Brown, for 1000 loads of lime laid in ditto, at 8d. per load - -	33	6	8
Ditto Thomas Demayne, for leading ditto, at 6d. per load - - - -	25	0	0
Ditto H. Ingham, for making 35 roods of ſtone wall, 2 yards high, at 7s. per rood, in a field called Croſs-Lands, in Rathmel	12	5	0
Ditto E. Brown, for 500 loads of lime laid on ditto, at 8d. per load - -	16	13	4
Ditto Thomas Demayne and Downham, for leading ditto, at 1s 4d. per load -	8	6	8
Carried over -	£.164	14	2

Paid

Brought over -	£.164	14	2
Paid Thomas Dodds for levelling this field, about ſeven acres - - -	6	0	0
Ditto for 400 pecks of hay-ſeeds ſown on ditto	3	11	8
Ditto for white clover-ſeed ſown on ditto -	2	15	6
	£.177	1	4

The parcel of ground called Wogdens is the ſame ſort of land as the Mires, mentioned in the annexed certificate.

I, JOHN PEART, of Settle, in the county of York, Gentleman, do hereby certify to the Society inſtituted in London for the Encouragement of Arts, Manufactures, and Commerce, that the account of expences (amounting together to the ſum of 177l. 1s. 4d.) for the improvement of lands in Rathmel, in the pariſh of Giggleſwick, in the county of York, of which I am proprietor, is in every reſpect true and juſt. Given under my hand, this 6th day of December, 1797,

JOHN PEART.

I THE Reverend JOHN CLAPHAM, Vicar of Giggleſwick, do hereby certify, that I believe the above-mentioned Certificate, ſigned by John Peart, is true. Given under my hand, this ſixth day of December, 1797,

JOHN CLAPHAM.

SIR,

MR. Holden has ſent to me the letter you addreſſed to him, in which you expreſs a wiſh, on the behalf of the Committee, to be informed of the real quantity of land improved.—The quantity of land improved, lying waſte, is as follows:

A.	R.	P.	
18	0	22	On a paſture called the Braa, ploughed, limed, and ſown with graſs-ſeeds.
10	0	0	On ditto, limed, being a very ſtrong tough white bent, mixed with ling.
			N. B. Theſe two parcels of ground J. Peart has incloſed, from a very large tract of ground, into one paſture.
28	0	22	Carried over

Pared

A.	R.	P.	
28	0	22	Brought forward.
14	3	6	Pared, limed, and ſown with graſs-ſeeds, on a paſture called Middle Bar.
			N. B. The above three mentioned quantities are parcel of Beecroft-Hall eſtate.
13	3	35	Graved, limed, and part ſown with graſs-ſeeds, on a parcel of ground called Scoultber, ſituate within Rathmel, in the pariſh of Giggleſwick.
56	3	23	

The total quantity of ground lying waſte, improved by J. Peart, is fifty-ſix acres three roods and twenty-three perches, ſtatute meaſure.

As you mentioned to me in a former letter, that the Committee had withdrawn their premium for draining lands, I did not think it neceſſary to ſtate, in my certificate, the quantity of land which I had drained, limed, and fenced, as I did not ſuppoſe that ſort of improvement came within any of the claſſes for which the Society offer premiums. I have for their ſatisfaction ſtated the quantity below.

	A.	R.	P.
The Mires and Wild Bar, which is all limed, drained and fenced, contain together	42	2	0
Land drained in the ſix-acre meadow,	4	3	0
The above is alſo parcel of Beecroft-Hall eſtate.—The Mires and Wild Oar, previous to J. Peart's purchaſe, were valued by the late Mr. Lang, of Leyland, part at 5s. and the remainder at 6s. per acre. Their produce before the improvement was chiefly ruſhes.			
Wogdens, ſituate within Rathmel, which has been limed, drained, and fenced, contains	17	2	0
N. B. This parcel of ground was purchaſed by J. Peart, in public auction, about 3 years ago, at £.100, and he has now let it for £.15 per annum, for 7 years, to be kept in graſs land.			
Croſs-lands in Rathmel, limed, fenced, and ſown with graſs ſeeds, - -	7	3	20
N. B. J. Peart purchaſed this field in auction, when he bought Wogdens, at 50 guineas per cuſtomary acre; and ſince he ſent his former certificates, J. Peart has ſold it at 75 guineas per cuſtomary acre, which has left him a profit, beſides paying all intereſt and expences, of about £.50.			
Statute meaſure	71	2	20

Should the Committee wiſh any further information which is in my power, I ſhall be happy to communicate it.

I remain,

SIR,

Your moſt humble ſervant,

JOHN PEART.

Settle, Jan. 27, 1798.

Mr. MORE.

SIR,

I WAS favoured with yours of the 16th inſtant; in anſwer to which I muſt ſay, that I *did ſign* the Certificate of Mr. Peart. I know he has made great improvements, and at a great expence; but I own I am a ſtranger to the number of acres contained in the land improved. I ſhall ſhew Mr. Peart your letter, and doubt not

he will be able to give you a ſatisfactory anſwer.

I am, SIR,

Your very humble ſervant,

GEORGE HOLDEN,
Miniſter of Horton Church.

Mr. MORE.

Horton, in Ribbleſdale,
Jan. 25, 1798.

SIR,

I RECEIVED your favour in due time, and have taken great pains to get an exact account of the quantity of acres improved by Mr. Peart. After I had obtained the beſt information, I deſired him to give me his account, in ſtatute meaſure, which agrees nearly with my information.

I believe Mr. Peart is a man of honour, and I could depend on his word; but I have not been guided ſolely by that. His own account accords ſo nearly with other perſons, whoſe

whoſe opinion I have aſked, that I thought I might ſafely and with propriety copy it.

The quantity of ground, in Statute Meaſure, upon an Eſtate called Beecroft-Hall, in the pariſh of Horton, in Ribbleſdale, in the County of York, improved by Mr. Peart, the owner.

	A.	R.	P.
In a paſture called the Braa, ploughed, limed, and ſown with graſs-ſeeds, the produce chiefly a ſhort ling before it was ploughed,	18	0	22
On the ſame paſture, limed, which was chiefly a ſtrong tough white bent, -	10	0	0
In a paſture called Middle Bar, puſh-ploughed, limed, and ſown with graſs-ſeeds,	14	3	6
Two parcels of ground, called Mires and Wild Bar, fenced, drained, and limed, &c.	42	2	0
Total quantity in Horton Pariſh, -	85	1	28

In a paſture called Scoutber, in Rathmel, in the pariſh of Giggleſwick, in the ſaid county of York, graved, limed, and part ſown with graſs-ſeeds, - -	13	3	33

In

	A.	R.	P.
Brought forward	13	3	33
In a paſture called Wogdens, in Rathmel, limed and drained, - -	17	2	0
In a paſture called Cinder Hill, in Rathmel, limed and drained - -	4	3	0
In a field called Croſs Lands, in Rathmel, limed and ſown with graſs-ſeeds,	7	3	20
Total quantity in Rathmel, in the pariſh of Giggleſwick, - - -	44	0	15

The above account I hope will be found a ſatisfactory one; and am,

SIR,

Your humble ſervant,

GEORGE HOLDEN.

Horton, in Ribbleſdale,
Feb. 20, 1798.

Mr. MORE.

SIR,

I BEG you will have the goodneſs to ſtate to the Society for the Encouragement of Arts, Manufactures, and Commerce, that I feel myſelf very highly honoured by them,

in their having adjudged to me their premium for improving land lying waſte; and, agreeably to the choice given by them to me, I will accept of the Silver Medal and Twenty Guineas, in preference to their Gold Medal. When the premiums are diſtributed, I could wiſh the Society would order what they have adjudged to me to be delivered to my bankers, Baron Dimſdale and Co. or to James Lambert, Eſq. Hatton Garden.

The ground at Rathmel, which I have improved, I intend keeping in my own occupation; and I ſhall, from time to time, have much pleaſure in communicating to the Society, with accuracy, the effects of my improvements; and I will alſo communicate the information my tenant at Beecroft-Hall may from time to time give me. I have had much pleaſure in looking over theſe improvements, and I doubt not but they will produce ſufficient profit. I am now employing ten men and ſeveral horſes, daily, in the improvement of graſs land.

The

The land at Graſſington, which I pared, limed, and ſowed with graſs-ſeeds, and which before that improvement produced a ſtrong ling, is not in my own occupation, but is let to a farmer.

I ſent your queſtions to him, which he anſwers as follows:

To the firſt—He ſays, the ground above mentioned will keep and fatten, between Lady-Day and Michaelmas, two ſheep on each ſtatute acre.

To the ſecond—He ſays, this ground will winter ſheep.

To the third—He ſays, he annually fattens Scotch ſheep on this ground.

To the fourth—He ſays, it annually fattens Scotch cows or Scotch bullocks.

To the fifth—The land is ſtocked with Scotch cows, or Scotch bullocks and Scotch ſheep: to every cow or bullock three ſheep.

Theſe are the anſwers of my tenant, to whom I ſent the queſtions you deſire to be anſwered. I let the paſture at Graſſington

for £.44 per annum, before the effects of the improvements could be known; at that price it paid me, for my improvements and the original purchaſe-money, a very high intereſt: my tenant ſays it is now a very cheap farm, though it was conſidered a high price by the neighbourhood when he took it.

The cattle fattened in this diſtrict of country (Craven) is principally Scotch ſheep and Scotch beaſts: when fat, they are ſold chiefly to Mancheſter, and the large manufacturing towns in Lancaſhire. The meat of ſuch cattle has a decided preference in thoſe markets. There is a breed of fine long-horned cattle in Craven; and the oxen cows (except ſuch of the latter as are wanted to keep up the ſtock of the country) are chiefly ſold into Leiceſterſhire and the ſouthern counties.

In the ſtocking of grazing land it is eſteemed good management for the farmer to allow his paſtures in the ſummer ſeaſon to be very full of graſs: by this the ground is improved, and the ſtock which he fattens

in

in ſummer can be kept without hay in the winter, and be in good condition.

I ſhall at all times be glad to give to the Society every information in my power, reſpecting the improvement of graſs land, in which much improvement is wanted, and in which I think very much may be done.

I remain, SIR,

Your obliged humble ſervant,

JOHN PEART.

Settle, March 26, 1798.

Mr. MORE.

PAPERS IN CHEMISTRY.

CHEMISTRY.

The Thanks of the Society were this Seſſion given to JOHN SNEYD, Eſq. of Belmont, in Staffordſhire, for the following Communication on the Subject of PRESERVING SEEDS OF PLANTS in a ſtate fit for Vegetation.

SIR,

MANY years ago having obſerved ſome Seeds which had got accidentally amongſt raiſins, and that they were ſuch as are generally attended with difficulty to raiſe in England, after coming in the *uſual way* from abroad, I ſowed them in pots, within a framing; and as all of them grew, I commiſſioned my ſons, who were then abroad, to pack up all ſorts of Seeds they could procure in abſorbent paper, and ſend ſome of them ſurrounded by raiſins, and others by brown moiſt ſugar; concluding

ding that the former Seeds had been preſerved by a *peculiarly favourable ſtate of moiſture* thus afforded them. It occurred, likewiſe, that as many of our common Seeds, ſuch as clover, charlock, &c. would lie dormant for ages within the earth, well preſerved for vegetation whenever they might happen to be thrown to the ſurface, and expoſed to the atmoſphere, ſo theſe Foreign Seeds might be equally preſerved, *for many months at leaſt*, by the kindly covering and genial moiſture that either raiſins or ſugar afforded them: and this conjecture was really fulfilled, as not one in twenty of them failed to vegetate, when thoſe of *the ſame kinds*, that I ordered to be ſent lapped in common parcels, and forwarded with them, would not grow at all. I obſerved, upon examining them all before they were committed to the earth, that there was a prevailing dryneſs in the latter, and that the former looked freſh and healthy, and were not in the leaſt infeſted by inſects, as was the caſe with the others. It has

been tried repeatedly to convey ſeeds (of many plants difficult to raiſe) cloſed up in bottles, but without ſucceſs; ſome greater proportion of air, as well as a proper ſtate of moiſture, perhaps, being neceſſary. I ſhould alſo obſerve, for the ſatisfaction of the Society, that no difference was made in the package of the Seeds, reſpecting their being kept in huſks, pods, &c. ſo as to give thoſe in *raiſins* or *ſugar any advantage over the others*, all being ſent equally guarded by their natural teguments. Whether any experiments of this nature have been made by others, I am totally ignorant; but I think that, ſhould this mode of conveyance be purſued ſtill more ſatisfactorily than I have done, very conſiderable advantages might reſult from it.

I am, &c.

JOHN SNEYD.

Belmont, Oct. 26, 1797.

Mr. MORE.

The

The Thanks of the Society were this Seſſion given to Mr. BROWNE, Chemiſt, at Derby, for the following Letter, deſcribing a quick and eaſy Method of converting Weeds and other Vegetable Matter into MANURE.

SIR,

ACCORDING to my promiſe to you ſome years ſince, I beg leave to communicate to the Society for the Encouragement of Arts, &c. and (if thought worth notice) by them to the world, a compoſition for Manure. Fearful it would not anſwer the purpoſe ſo fully as I could wiſh, I deferred from year to year troubling you; but I now find, both by numerous trials made by my friends, as well as myſelf, the very great utility of the compoſition, as well as its cheapneſs, with the capability of its being made in any ſituation and in any quantity.

quantity. The mode of making it is as ſimple as, I truſt, it will be found productive. It is nothing more than green vegetable matter, decompoſed by quick or freſh-burnt lime. A layer of the vegetable matter about a foot thick, then a very thin layer of lime, beat ſmall, and ſo on; firſt vegetable, then lime, alternately. After it has been put together a few hours, the decompoſition will begin to take place; and unleſs prevented, either by a few ſods, or a forkfull of the vegetables at hand, it will break out into a blaze, which muſt at all events be prevented. In about twenty-four hours the proceſs will be complete, when you will have a quantity of aſhes ready to lay on your land at any time you wiſh. Any and all ſorts of vegetables, if uſed green, will anſwer the purpoſe; ſay weeds of every deſcription. They will doubly ſerve the farmer, as they will not only be got at a ſmall expence, but will in time render his farm more valuable, by being deprived of all noiſome weeds.

But

But if this compoſition anſwers the purpoſe, as I flatter myſelf it will, a very ſhort time will ſee almoſt every weed deſtroyed, which ſuppoſing to be the caſe, I have made my calculations with clover, grown for the purpoſe; for inſtance, I will take one acre of clover, which at one cutting will produce from fourteen to eighteen tons of green vegetable matter, and about three tons of lime; this, when decompoſed by the above proceſs, will yield aſhes ſufficient to manure four acres, the value of which I eſtimate at ſomething under four pounds; the clover, according to the value of land here, I will ſay two pounds, which, take the average of the kingdom, is too much. The lime I will alſo ſay two pounds; but that will vary, according to the diſtance it is to be fetched. Take them together, I think will be about the average value. Now if this is the caſe, and as far as I have been able to try it I find ſo, how valuable muſt it be to the community in general! If it anſwers the purpoſe, I ſhall

feel

feel myſelf much obliged by the Society making it as public as they poſſibly can.

The vegetables ſhould be uſed as ſoon after they are cut as poſſible, and lime as freſh from the kiln as the diſtance will allow of; as on thoſe two circumſtances depends the goodneſs of the compoſition.

I am, &c.

H. BROWNE.

Derby, April 27, 1798.

Mr. MORE.

The

The Thanks of the Society were this Seſſion given to ARTHUR WILLIAM DEVIS, Eſq. for the following Communication reſpecting the Culture of POPPIES, and the procuring OPIUM in the Eaſt-Indies.

SIR,

I SEND for the acceptance of the Society a ſmall iron inſtrument, called by the natives of Hindooſtan Nehrea,* and uſed by them for making inciſions in the capſules of the plants for the extraction of opium. As

* This inſtrument, whoſe exact dimenſions are ſhewn by the wood cut, is formed of two thin pieces of plate-iron, ſharpened at the broad ſemicircular edge; and each being wound round with thread, the two are faſtened together by other thread twiſted round them, and thus held at a ſmall diſtance from each other; one of the inſtruments is reſerved in the Society's Repoſitory.

NEHREA, *an Inſtrument uſed by the Natives of* Hindooſtan, *for making inciſions in the Poppy Head.*

As the cultivation of the Poppy in this country for the preparation of Opium has lately engaged the attention of this Society, I have taken the liberty to ſubjoin a few extracts from a memorandum on the ſubject, part of a work on the Arts, Manufactures, and Agriculture, of Hindooſtan, collected at various times during my reſidence in India. I do not pretend to any practical knowledge, but if it may afford the leaſt hint to thoſe engaged in the purſuit, I ſhall feel great pleaſure in the communication.

I am

Your humble ſervant,

A. W. DEVIS.

Mr. MORE.

" The greateſt quantity of Opium imported from India, is prepared in the province of Behar, the ſoil of which moſtly conſiſts of clay, with a conſiderable portion of ſand. The richeſt ſoils of this deſcription are preferred by the natives for the

cultivation of the Poppy, which is the PAPAVER SOMNIFERUM of Linnæus. The ground is ploughed ſixteen or eighteen times, and manured with the dung of cattle folded on it at night, or rotten cow-dung: the manure is ploughed in, and the ground thoroughly broken and carefully levelled with the harrow. The ſeed is ſown in the broad-caſt way; and the field is then divided into ſquares of four or five feet, leaving an interval, which is raiſed ſix inches; and on theſe ridges a channel is excavated to convey water to every ſquare, from a well near the field. The plants are five or ſix inches from each other, and are watered once a week, or oftener, until they are ſufficiently ripe for the extraction of the Opium. About ſeven days after, the flowers fall. When the capſules diſcover to the preſſure a degree of hardneſs, they begin to collect the Opium. At ſun-ſet, a double inciſion is made on each capſule, from the ſtalk upwards, at one ſtroke of the Nehrea: the operation is repeated every

ſecond day, for a fortnight or three weeks. The juice which has exuded during the night, from the wounds made the preceding evening, is ſcraped off the capſule with a ſmall iron ſcoop; this is done early in the morning, before the dew is diſperſed. The ſeeds are valuable for the oil they contain, and, as an article of food, are in great requeſt with the natives."

PAPER

IN

POLITE ARTS.

POLITE ARTS.

The GREATER SILVER PALLET was this Seſſion voted to Mr. TIMOTHY SHELDRAKE, for the following Diſſertation on PAINTING IN OIL, in a manner ſimilar to that practiſed in the ancient Venetian School.

THE method of painting practiſed in the Venetian School, I conceive to have been as follows:

The cloth was primed with colours in diſtemper, of a browniſh hue, ſuch as would properly enter into the darkeſt parts of the picture. The moſt tranſparent colours are the propereſt. I believe umber was moſt generally uſed, broken with red, yellow, or blue, according to the tint intended to be produced, and diluted with chalk or whiting to the proper degree of ſtrength. Upon

the ground ſo prepared, the ſubject was correctly drawn with umber, pure, or mixed with lake, blue, or black; and, with the ſame colours, thoſe ſhadows that were darker than the ground were then painted in.

The artiſt then painted the lights with *pure white*, in a ſolid body, where the light was brighteſt, or where the full effect of colour was to be produced; and, where the demi-tints were afterwards to be, ſcumbling it thinner by degrees, till it united with the ſhadows.

In this manner the chiaro-oſcuro was finiſhed as much as poſſible, and the local colour of every object in the picture glazed over it. All the colours uſed in this part of the work were ground in oil, which was abſorbed into the ground, the picture remaining flat, ſomething like a picture in water-colours or crayons; it was then varniſhed, till ſaturated with varniſh, and the full of every colour brought out: the picture was then complete.

Upon

Upon the moſt ſuperficial view of this proceſs, it will be evident that a picture painted by it is, as to all viſible properties, a varniſh picture; for the ſmall quantity of oil that had been uſed, ſunk into the ground, and never could riſe again to be hurtful; while the varniſh, being laid on after the colours, gave them all the brilliancy and durability they could derive from that vehicle, without being liable to the objections that are made to painting in varniſh, ſuppoſing it to be uſed in the ſame manner as oil is in painting with oil. It is true that this mode of painting is itſelf liable to ſome objections; theſe I have endeavoured to obviate, and ſhall therefore mention hereafter. Here it may be obſerved that, as any varniſh may be uſed, it is to this circumſtance we muſt attribute the different degrees of durability in pictures of the Venetian School. I have ſeen ſome that would reſiſt the moſt powerful ſolvents, while others were deſtroyed by the weakeſt; though all poſſeſſed

the

the apparent properties that diſtinguiſh the Venetian pictures from all others.

As I do not pretend to degrade painting to the rank of a mechanical art, that may be infallibly practiſed by a receipt, I ſhall be permitted to obſerve, that this was the general ſyſtem of the Venetian ſchool, which I have ſeen variouſly modified in the works of different artiſts of that, as well as of the Flemiſh, which is derived from it. It is ſuſceptible of an almoſt infinite number of modifications, in proportion to the talents, the judgment of, and the objects to be painted by the artiſts who may adopt it. This being the caſe, if it is proved by experiment that effects ſimilar to thoſe of the Venetian pictures may be produced by this method, and that the ſyſtem has a ſtrong tendency to produce that brilliancy, and harmony of colouring that is ſo much admired, with more certainty and facility than thoſe qualities can be obtained by any other mode of painting, I hope my caſe will be proved to the ſatisfaction of the Society.

I once

I once aſked Sir Joſhua Reynolds, by what circumſtances in the management of a picture he thought the harmony of colouring was to be produced? He replied, an unity of light and an unity of ſhadow ſhould pervade the whole. He explained to me the difficulty of reducing the various colours of all the objects that may be included in a picture, and the various modifications of thoſe colours to the ſimple, harmonious ſtate he deſcribed, and illuſtrated what he had ſaid by this ſimile. "A picture, to poſſeſs harmony of colouring, ſhould look as if it was painted with one colour (ſuppoſe umber and white), and, when the chiaro-oſcuro was complete, the colour of each object ſhould be glazed over it."

This obſervation, from ſuch authority, was impreſſed with peculiar force on my mind; and if I can retrace its operations on a ſubject which has ſo long engaged my attention, I ſhould ſay Sir Joſhua's obſervation was the clue that guided me through all my experiments, and, I hope, will enable me to prove,

prove, that the beautiful and ſimple practice which he ſuggeſted as a ſimile, was literally the practice of that ſchool upon whoſe works his ideas of colouring were founded. At the ſame time I may obſerve, that the fact ſeems to have eluded his obſervation, or he would not have uſed it as a compariſon to ſimplify his deſcription of a practice which he thought both difficult and complex.

In the Newtonian doctrine of Light and Colours, it is believed that all colours are inherent in light, and are rendered viſible by the action of various bodies, which reflect particular rays, and abſorb the reſt. Without diſputing the truth of this doctrine, it is to be obſerved, that a painter muſt conſider the objects he repreſents as being analogous to the materials he uſes to repreſent them; and, in this view of the ſubject, colour is to be conſidered as a property inherent in bodies, which is rendered viſible by the contact of light, a colourleſs, or at leaſt a mono-coloured ſubſtance, and ſhadow the mere privation of light.

A picture may repreſent either a group of figures, or other objects, in a room, or any objects in the open air: whatever the ſituation may be, it repreſents certain objects in a given ſpace, poſſeſſing individually their peculiar colours, and generally expoſed to the operations of light. The quantity of light each can receive muſt depend upon its form, and its poſition reſpecting that part whence the light comes; for, in proportion as other parts recede from the light, the ſhadow becomes viſible: but ſhadow is nothing but privation of light, and privation of colour, in proportion as the light is diminiſhed. Some attention to theſe circumſtances will, perhaps, enable us to demonſtrate the truth of Sir Joſhua's poſition.

If a globe of one colour be expoſed in a painter's room, properly darkened, that part which is neareſt the light will partake of its colour; the next part will ſhew the true colour of the object: that which firſt recedes from the light will be a little obſcured, the next a little more, and ſo on progreſſively,

progreſſively, till that part which is fartheſt from the light will loſe its colour, and appear equally dark with the ſhadieſt part of the room. Now we know this globe is of one uniform colour; the variations we ſee in different parts of it are only deceptions, occaſioned by the acceſſion of light in ſome parts, and the privation of it in others.

What is true of this one object and its parts, would be equally true of any number of objects, whatever their colours or relative ſituations might be: if they were placed together in the ſame room, each would poſſeſs its own individual colour, each would partake of the general light, in proportion to its ſituation, and of the general darkneſs in proportion as it recedes from the light. All this may be eaſily conceived; but the difficulty, and, in the ordinary modes of painting a ſerious one it is, is to repreſent ſuch objects with the appearance of truth, and preſerve the harmony neceſſary to conſtitute a whole. The Venetian painters however, by whatever means they obtained their

their knowledge, discovered a method so simple, that perhaps no other can produce such brilliant effects, and undoubtedly not with facility and certainty at all comparable with theirs.

The artist will remark that, in describing the whole of the Venetian method of painting, I have said nothing of the manner of producing those demi-tints which conduce so much to the brilliancy of a picture, which are so difficult to execute, and in which he most frequently fails. Those tints are, in the ordinary modes of painting, produced by the mixture of black, grey, blue, or brown (according to the judgment of the artist), with the local colours of the objects. It is these tints which, from their being made with such colours, it is difficult to get clear, and which never are so clear in any other as in the Venetian, and in some of the Flemish pictures, which are painted upon analogous principles. The fact is, that those painters produced all such tints without the admixture of any colour

to repreſent them, and by a method ſo like that by which they are produced in nature, that this circumſtance alone enſures a degree of brightneſs to their colours, and of harmony to their ſhadows, that it is perhaps impoſſible to produce, in an equal degree, by any other mode of painting.

It is a ſingular fact, which I have not ſkill in phyſics to be able to account for, though by numerous experiments I have aſcertained beyond contradiction, that if upon any degree of brown, between the deepeſt and the lighteſt brown yellow, we paint pure white, in gradations, from the ſolid body to the lighteſt tint that can be laid on, *all the tints between the ſolid white and the ground will appear to be* GREY, intenſe in proportion to the depth of the ground, and the thinneſs of the white laid upon it. But in every caſe all the tints laid upon one ground will harmonize with each other, and form one connected chain (if I may uſe the expreſſion), which will perfectly unite the higheſt light with the darkeſt ſhade.

If

If then we examine the component ſubſtances of a Venetian picture, we ſhall find the lighter parts conſiſt only of white, to repreſent the light; and of the local colours of the objects it repreſents, the demi-tints are imitated by an *appearance* almoſt as deceptive as the ſimilar appearances in nature: but in every other method of painting, theſe demi-tints are produced by mixing ſome duſky colour with the local colours and the light. The compariſon of theſe methods will afford a demonſtrative reaſon why the Venetian muſt be brighter than any other mode of painting.

Having ſhewn, as near to a demonſtration as the nature of the ſubject will perhaps admit, why thoſe parts of a Venetian picture that are connected with light and colours are brighter than the correſponding parts of any other pictures, it remains to explain the cauſe of ſimilar ſuperiority in the darker parts of the ſame pictures.

It has been ſaid, with much confidence, that as white repreſents light, ſo black is

the repreſentative of darkneſs. But though this may be true in phyſics, it certainly is not ſo in painting: for the painter's art is to repreſent objects as they *appear*, in point of colour, to be, not as they really are. Thus, if I know an object is perfectly black, and am to repreſent it as it appears to be at the diſtance of fifty feet, black from the pallet will not produce a good imitation of it, becauſe the interpoſition of fifty feet of the atmoſphere will cauſe it to appear of a colour different from what it really is; and *vice versâ*, if we go into a cavern, a cellar, or a room, ſo darkened that the colour of no object can be diſtinctly ſeen, and if we there hold any ſolid black ſubſtance near to the eye, the difference will be viſible at once; the black object will be immediately diſtinguiſhed, by its ſolidity and colour, from the ſurrounding ſpace, and ſuch remote objects as may be obſcurely viſible through it. Theſe objects actually poſſeſs their individual colours, and only appear indiſtinctly from the abſence of light. The black object may appear ſolid,

and of that colour, from its proximity to the eye; but the circumjacent ones will appear of a colour perfectly distinct from it, more or less transparent, in proportion to their distance from the eye, and shewing a portion of their individual colours, according to the quantity of ill-defined light that may be admitted. Thus we see (if I may venture to mention so notorious a truism), that shadows are nothing real; they only seem to exist in the absence of light, and give to objects an ill-defined appearance, distinct from, though in some instances mixed with, light and colours in different degrees: but as the painter must represent this *appearance* by something *real*, he chooses the colours most analogous, viz. browns, and the most transparent of their class, to represent this transparent, but imperfectly defined appearance in nature.

It has been supposed that the Venetian painters had some peculiarly rich and transparent brown colour, which is seen to pervade all the works of that school; the effect

of which no modern artiſt has been able to imitate, and which therefore is ſuppoſed to have been loſt. It is not very probable that a colour ſo common, as to pervade the works of the worſt as well as of the beſt artiſts of that ſchool, ſhould be ſo unaccountably loſt; and, as the effect attributed to it may be eaſily produced by the mode of painting I have deſcribed, it is not unreaſonable to conclude that this much-lamented colour has never exiſted.

It is well known that chalk, and other earths of the ſame kind, loſe, when wetter, much of their whiteneſs, and become ſemi-tranſparent: it is equally certain, that if umber or other earths are mixed with chalk, and ſaturated with varniſh after they are laid in the cloth, they in like manner become diaphanous, and are infinitely more brilliant than the ſame colours can be when mixed with white lead and oil. This ſeems, on good grounds, to have been the baſis of the Venetian method of painting, and all its peculiar effects; at leaſt, if I may draw any

concluſion

concluſion from the numerous experiments I have made. But if artiſts, whoſe talents will enable them to repeat thoſe experiments to the beſt advantage, ſhould be induced to do ſo, the fact will be determined in the moſt ſatisfactory manner.

I may now be permitted to ſay, it is difficult, if not impoſſible, to conceive a theory more ſimple, more beautiful, or more true, than that of Sir Joſhua Reynolds. It is certainly impoſſible to form a practice more ſimple, or more conformable to that theory, than the one I have deſcribed, as will be evident on recapitulating the particulars.

The artiſt, having determined what hue ſhould pervade his picture, formed his ground with that colour prepared in diſtemper; upon this the ſubject was drawn, and the darker ſhades painted in with tranſparent colours, which ſunk into the ground: with pure white he then painted in all the lights and demi-tints, and, laſtly, glazed in the colours, each in its place. Upon applying the varniſh, the darker ſhades

were, as to body, incorporated with the ground; and thus, though different in colour, appeared thinner and more tranſparent than any colours could be when laid upon any ground: the full effect of every colour was brought out, and the picture was complete.

Whoever has been accuſtomed to paint, or to mark the progreſs of painting in the common way, and will reflect on the practice of the method I have deſcribed, by artiſts who had been brought up to it, muſt ſee that ſuch artiſts would paint with a degree of facility, expedition, and certainty, as to effect, that could never be equalled in the ordinary way of painting in oil; beſides, it will be evident that an artiſt would not only paint a picture himſelf with more facility, but, if he had occaſion, could employ a number of ſubordinate artiſts upon large works, and put thoſe works out of hand with more uniformity, as to merit and effect, than if he were to employ ſuch aſſiſtants in ſimilar works if they were to be painted in the common way.

I am

I am ſenſible how little attention will, and perhaps ought to be paid to obſervations on painting, if made by thoſe who are not profeſſionally artiſts: for practical men acquire a kind of knowledge that can never be obtained in any other way; but at the ſame time they contract prejudices that often prevent them from fully inveſtigating any novelty in practice that may be offered to their notice. The ſpeculative man, on the contrary, who inveſtigates the properties of matter, unſhackled by practical prejudices, and with ideas purely chemical or philoſophical, will be more likely to aſcertain all the facts relative to any theory that may become the object of enquiry. In this way I hope I have proceeded in this inveſtigation. I have endeavoured to conſider pictures as maſſes of matter, poſſeſſing the properties, but differing from each other in degree of brilliancy, tranſparency, and duration. I have endeavoured to aſcertain the cauſes of this difference, with what ſucceſs the Society will determine, and with what

utility, muſt be hereafter aſcertained, by the practice of thoſe for whoſe uſe the inveſtigation was intended.

I ought, perhaps, here to take leave of the ſubject; but as I have been induced to ſubmit to the Society's notice an attempt at painting, it may be expected that I ſhould give an account of the manner in which the pictures I have ſent were painted.

I have already mentioned, that there are ſome difficulties in the method of painting I have deſcribed, as being that of the old artiſts, and which would form objections of conſiderable force to the practice of it by artiſts who are well acquainted with the uſual modes of painting: theſe difficulties are, firſt, the ground abſorbs the oil from the colours ſo faſt, that they are not ſo manageable as in oil-painting; ſecondly, the effect of the picture is not ſeen till the finiſhing varniſh is laid on; and thirdly, as the effect is not ſeen till the picture is finiſhed, it will ſometimes diſappoint the artiſt, and in that caſe it will be difficult, if at all practicable, to alter it.

As I believe the proceſs I have deſcribed in the beginning of this Paper is ſimilar to that of Miſs Provis, the artiſts who are acquainted with her recipe can aſcertain whether my conjectures on this ſubject are right or not. I am certain at leaſt that theſe difficulties occurred in my attempts to paint, and to obviate them I adopted the following proceſs.

I prepared the ground in diſtemper, and painted the dark parts in the way I have deſcribed; I then varniſhed the ground with the copal oil-varniſh, till it was fully ſaturated, and by this means the full effect of that part of the picture was ſeen; upon this I painted the lighter parts with white, uſing much of the vehicle where the colour was thin, and little in the ſolid parts, leaving the white in them dead: by this means I underſtood the effect of my chiaro-oſcuro, as I ſaw the effect of the demi-tints nearly as well as when the picture was finiſhed.

Upon this I glazed the colours, in the way I have deſcribed in the beginning of this

this Paper, and finiſhed the picture. I often found (probably from want of practice) that the effect was different from what I intended, as the effect of the colours, added to that of the chiaro-oſcuro, produced an eſſential alteration in the whole; as I took care in general that the defect did not ariſe from too much white, I added more where it was deficient, and glazed freſh colours over it, which united perfectly with what had been done before, and did not give the appearance of a mended picture. If the defect was from too much white, I glazed on it a colour ſimilar to that of the ground, painted with freſh white upon that, and glazed the proper colours over it. In this way I found I could alter the picture, but not ſo well as in the former caſe.

I found I could, when neceſſary, increaſe the effect of the picture, by painting on the principal maſs or maſſes of light with the local colours, only mixed with white; as this practice brought thoſe parts more forward, by making them appear ſolid, and thus contraſting

traſting them with the tranſparency of the reſt of the picture. In this way I found I could uſe the colours tempered with copal varniſh without difficulty; and I believe, that if I had been accuſtomed to paint large pictures, I could have painted one as large as life as eaſily as either of thoſe I have ſubmitted to the Society's inſpection.

I am

The Society's moſt obedient

humble ſervant,

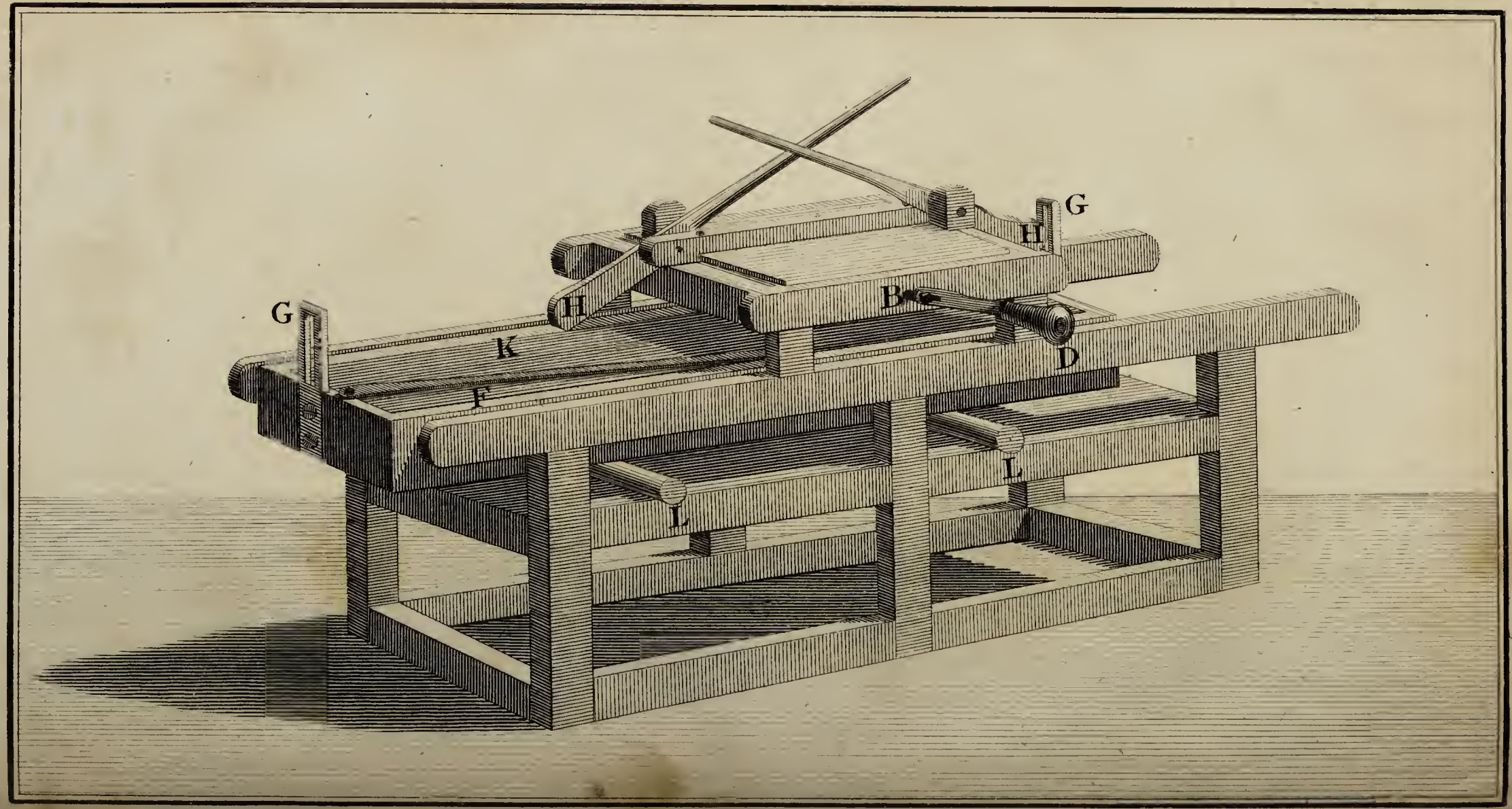
TIM. SHELDRAKE.

Strand, Feb. 14, 1798.

PAPERS

IN

MECHANICKS.



A View of Mr George Jee's improved Mangle.

MECHANICKS.

In conſideration of the merit of the MANGLE invented by Mr. JEE, the Society this Seſſion voted their SILVER MEDAL to him; and Plates, and a Deſcription of the Mangle, are annexed, and two complete Models reſerved in the Repoſitory, for the uſe of the Public.

I BEG leave to preſent to the Society for the Encouragement of Arts, Manufactures, &c. for their inſpection, the Model of a Machine (of my own invention) for Mangling Linen.

This Mangle is ſo conſtructed, that the handle is required to be turned one way only, which moves the machine more ſteadily, and ſafer to the linen, than by varying the turnings of the handle. I have made ſeveral Mangles on this conſtruction at large, which have anſwered the purpoſes very well, and given

given general ſatisfaction to all who have ſeen them at work. It is found, that a woman and a boy are ſufficient to work this Mangle, and can do as much work (in the ſame time) as three or four perſons at any other I have ſeen. This induced me to preſent it to the Society, knowing of no other way ſo likely to convey it to the community at large, as through the channel of your excellent yearly publication of the Tranſactions of the Society. If it is found worthy of a place in the Society's Repoſitory, and they think it worth laying before the public, it is at your ſervice, and will give me the greateſt ſatisfaction.

I am, SIR,

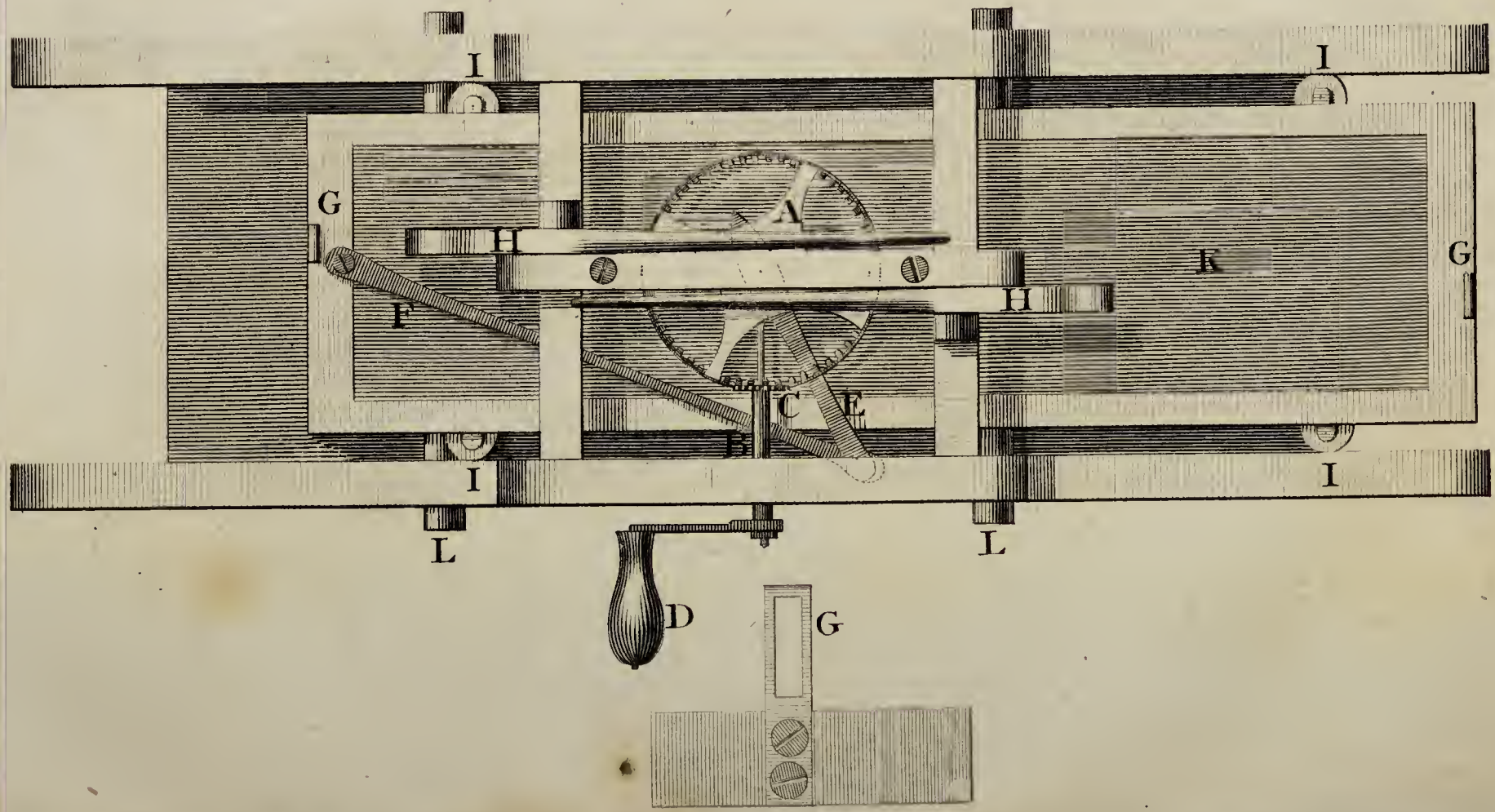
Your moſt obedient,

very humble ſervant,

GEORGE JEE.

Rotherham,
April, 24, 1797.

Mr. MORE.



A Plan of an improved Mangle by W.m George Jee.

The DESCRIPTION *of* PLATE I.

A, The great wheel, which in the Machine at large is fifteen inches diameter. B, the arbor, on which the nut C is fixed. D, the handle of the winch. E, the crank, twenty-one inches long. F, the rod of the crank. G G, the hollow ſtuds, to lift the ends of the bed up. H H, the levers. I I I I, the four pullies fixed on the moveable bed. K, the moveable bed. L L, the ends of the rollers.

At the bottom of this Plate is a front view of one of the hollow ſtuds, G, to ſhew its form, as ſtanding at the end of the bed, and into which the levers alternately enter, when it becomes neceſſary to lift up the bed to put in or take out the rollers.

PLATE II. is a perſpective view of the Mangle when at work; the letters of reference to the ſeveral parts being the ſame as in Plate I.

A Bounty of THIRTY GUINEAS was this Seſſion voted to Mr. JOHN PRIOR, for his improved detached ESCAPEMENT FOR WATCHES, a Plate and Deſcription of which are hereunto annexed, and a complete Model reſerved in the Society's Repoſitory, for the inſpection and uſe of the Public.

SIR,

AS all our beſt writers on watches agree, that the longer the vibration of a balance is, the better it will keep time, and as no detached Eſcapement has been made (that I know of), in which the balance paſſes over the ſame ſpace in one vibration that mine does; I am encouraged to preſent this Machine, with a Drawing, and an explanation of the ſame, for the inſpection of the Society.

The

Fig 2.

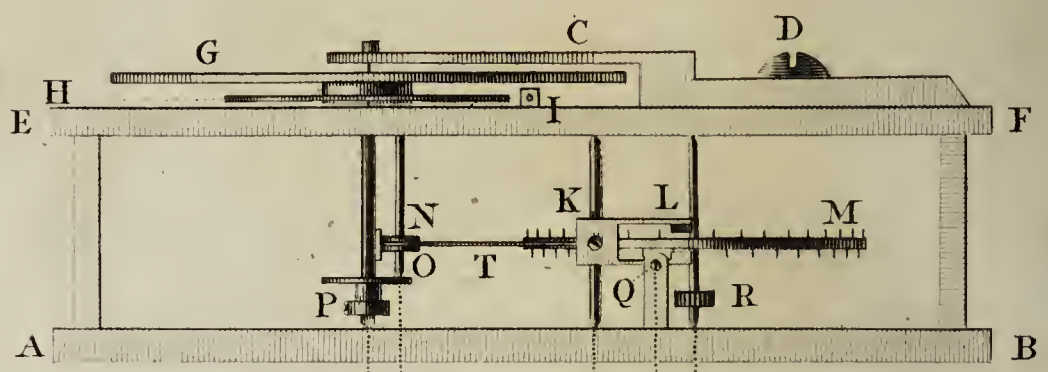
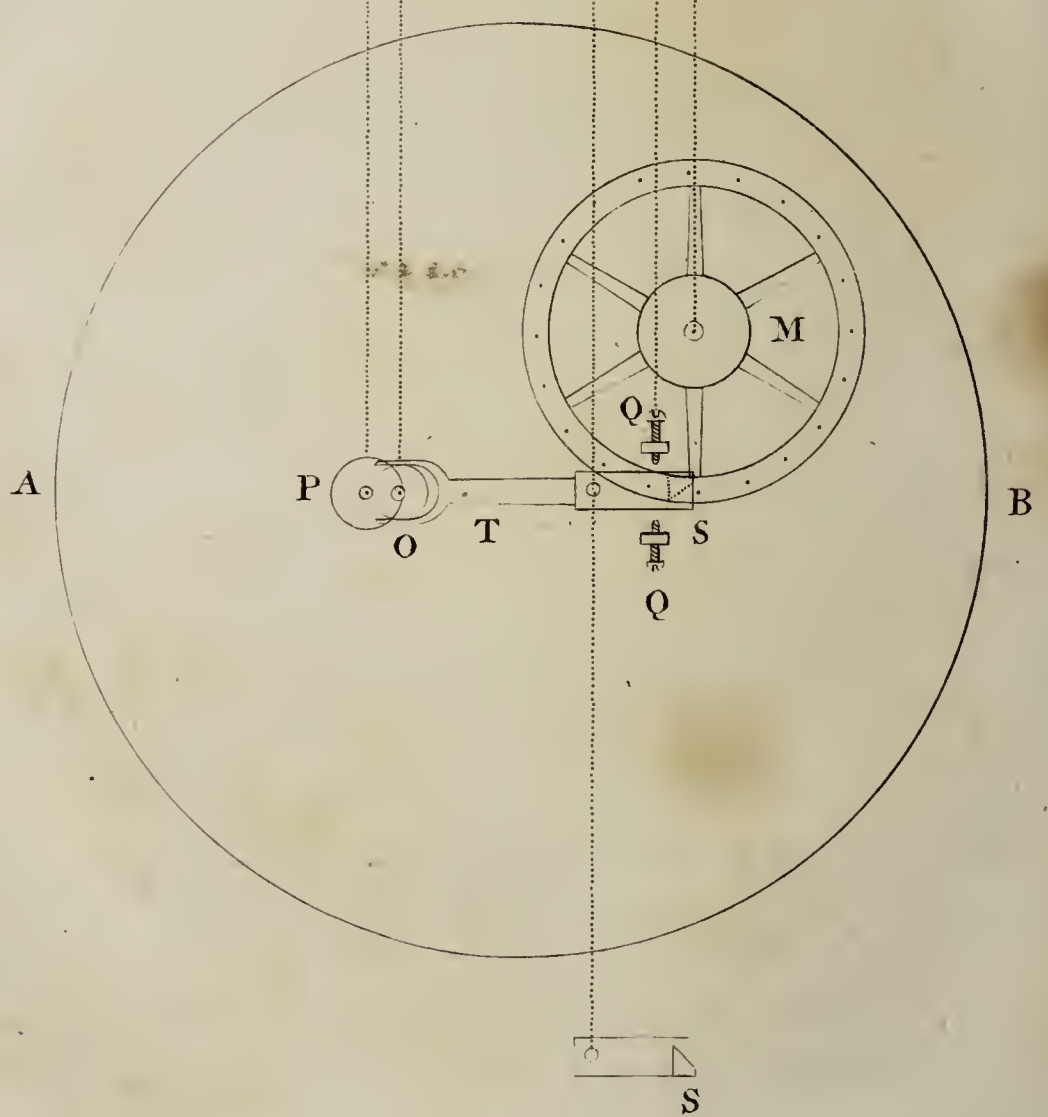


Fig 1.



Mr. John Prior's Improved Escapement.

The DESCRIPTION *of the new-invented* DETACHED ESCAPEMENT FOR POCKET WATCHES, &c.

Fig. I. and *II.* repreſent the principal parts of it.

Fig. I. A B, the pillar-plate; and A B E F. *Fig. II.* is a ſection of the frame, without pillars or potance. C, the cock, ſcrewed to the potance-plate at D. G, the balance, the lower point of which runs in the plate (but perhaps a potance will be more convenient for it in a pocket watch). H, the regulating ſpring, pinned faſt in the ſtud at I. O, the friction wheel; N, its arbor, the higher pivot of which runs in the collet the balance is rivetted to, and the lower in a collet ſcrewed faſt on the balance-arbor at P: ſo, when the balance turns round, the friction-wheel is taken along with it.

M, the intermittent lever-wheel. L, its arbor; R, its pinion, in the rim of which

wheel are put an equal number of pins on each ſide. The pins on one ſide of the wheel are put exactly at the middle diſtance of thoſe on the other ſide.

T, the intermittent lever, ſcrewed faſt to K, its arbor. Q Q are its banking ſcrews.

This lever is all made of one ſolid piece of ſteel. That end of it next the wheel is cut open wide enough to receive the rim, without touching either ſide of it, as far as the pallets or inclined planes are; at the end of which it is cut wider, to admit the pins of the wheel. (See *Fig. II*, a ſection of it as under L.)

The diſtance from the centre of the balance to the extreme part of the lever, or end of the pallets, is divided, in a right line, into ten equal parts, and the pivot-hole of the friction-wheel is made at the firſt tenth diviſion from the centre of the balance. There are thirteen ſemi-diameters of the friction-wheel from its centre to the end of the pallets.

When

When the balance is at reſt, then the centre of the balance, the centre of the friction-wheel, and the centre of the lever, will be all in one right line. (See *Fig. I.*)

The lever is divided into three equal parts. The diſtance from the end of the pallets to the centre of motion of the lever, one part; and from the centre of motion to the centre of the friction-wheel, when the balance is at reſt, two parts: ſo that, whatever the velocity may be at the end of the pallets when in motion, that part of the lever, or the forked part of it, which is oppoſite the centre of motion of the friction-wheel, will be twice as much.

S S repreſents a ſuperficial view of the pallets. The pallet below the pillar-plate is taken off from the other, otherwiſe the place of action could not be ſeen in the drawing.

In *Fig. I.* we have a view of the lever before the machine is wound up: a pin is half-way down the pallet; but when the pin

impels the pallet, the lever moves, and gives motion to the balance, and the pin is diſengaged from the pallet at the angle: that inſtant a pin, on the oppoſite ſide of the wheel, falls upon a circular part of the end of the other pallet, or upon that part where it and the lever are entirely at reſt, until the balance makes its return, and the friction-wheel comes into the forked end of the lever. Then the friction-wheel impels the lever, while the balance runs over the ſpace of about twenty degrees, in which time the pin is diſengaged, from a place of reſt to a place of action, where it impels the lever while the balance runs over the ſpace of about one hundred degrees. Then the pin drops off at the end of the pallets as before, and the balance is entirely left at liberty; at which time its velocity is ſo great, and its motion ſo eaſy, that it turns once round upon its pivots, and two hundred and forty degrees every vibration.

It is to be obſerved that, in the ends of the fork, one part is turned up and the other down,

down, in order they may not both go through one notch in the balance-arbor; for, by having two different parts cut away, the fork is locked faſt in every vibration, and is unlocked only by the friction-wheel, in its return for another vibration.

Notwithſtanding the balance makes one turn and two hundred and forty degrees every vibration around its axis, yet, when the balance is at reſt, and the ſame power applied to it (which keeps it in motion as above), the balance will only move through the ſpace of about fifteen degrees, which is only one fortieth part it keeps it up to when in motion.

It muſt be allowed, the leſs the wheels, or the power, have to do with the balance, the more accurate the time will be ſhewn.

I ſhall ſay no more on this ſubject, but refer it to the Society for the Encouragement of Arts.

SIR,

IN anſwer to your favour of February 10, I have to inform you with what intention I apply to the Society.

Firſt, My intention was for a bounty or premium, if the Society ſhould judge my New Eſcapement worthy.

Secondly, It was not my intention to ſecure this invention to myſelf, by obtaining a patent for it, but to lodge it in the Repoſitory for the inſpection of the Public.

Thirdly, I can ſincerely ſay, I never heard, by any perſon or perſons whatever, nor had the leaſt knowledge or information by any one living, relating to Mr. Mudge's Anchor-Scape, before I now came to London, nor even heard its name mentioned before you wrote your laſt letter to me.

I have, a few days ago, ſeen Mr. Mudge's Anchor-Scape, and find the wheel and pallets to be exactly like thoſe of a common clock with the dead ſcape. The only difference (in that which I ſaw) is the addition of an arm, whoſe length is the ſame from the

the centre of motion the pallets are of, the uſe of which is to give motion to the balance againſt two ſteps. The teeth of the wheel reſt, after every vibration, upon the outſide of one, and on the inſide of the other pallet, alternately. If that part where the tooth reſts be not exactly part of a circle, whoſe centre is the axis of the pallets, the balance, while diſengaging a tooth from a place where it ſhould reſt, will give motion to the wheel, and in ſo doing will find it more difficult to unlock, than it would be if that place was entirely circular. How theſe places of reſt are to be made entirely ſo without turning, I cannot tell; and if turned, time will be found neceſſary in the execution.

But, to make the Anchor-Scape ſtill more complete, the places where the tooth of the wheel reſts after every vibration ſhould be equal, and as ſhort as poſſible with ſafety, that the balance may looſen them with the leaſt power; but if the places of reſt be equal (as they ſhould be), the balance

balance will paſs over more degrees in diſengaging a tooth on the inſide of the pallet, than it would do in looſening the other one on the outſide.

In my new-invented Eſcapement, the places of reſt are equal, and at an equal diſtance from the centre of motion (which cannot be the caſe of the Anchor-Scape), and both turned with eaſe at the ſame time: ſo the balance will paſs over an equal number of degrees, in diſengaging a pin from a place of reſt to a place of action, on each pallet, alternately.

The centre of motion of my lever is at one-third of its length: ſo, whatever the velocity of the pallets may be, the forked end of it is twice as much, and will follow the balance through one third more ſpace than the Anchor-Scape can do, which I ſaw at Mr. Howel's, or perhaps more, and by that means will cauſe the balance to turn entirely farther; and when the balance vibrates farther, all kind of external motion does

does not affect the vibrations ſo much as they would be if the balance vibrated leſs.

The ſame may be ſaid of the force from the main ſpring, which is communicated, through a train of wheels and pinions, up to the balance, which force will not be entirely equal, though executed by the beſt workman. But the vibrations of the balance will be entirely more uniform, though the impulſes given to it through a train of wheels, &c. be unequal, than they would be by the ſame power or impulſes, if the balance vibrated leſs.

The objections which may be made by thoſe who do not underſtand it, is the increaſe of friction upon the balance pivots; but that will be done away, when the ſuperior advantages are conſidered in their proper light.

And as the balance is that part of the watch which regulates the whole machine for time-keeping, it is neceſſary its motion ſhould be diſturbed the leaſt poſſible, both in receiving the impulſes, and diſengaging

that

that part which gives it motion: this was my reaſon for introducing the friction-wheel, which goes into the fork of the lever at every vibration, diſengages a pin from a place of reſt, to where it acts upon the pallet, with as much more eaſe than it would have done (if the ſame diameter had been fixed), as the diameter of a pivot of the friction-wheel is contained in the diameter of the wheel, which may be twenty, or nearly thirty times: this, and the length of its vibrations, will add greatly to the perfection of its time-keeping.

If a wheel, which is going to be cut by an engine, be not put exactly in the centre of the circle the diviſions are put upon, though the diviſions are mathematically true, the wheel will be far from being ſo. Apply ſuch a one to the Anchor-Scape, and it incloſes as many errors as there are teeth between the pallets. Apply the ſame erroneous diviſions to my Eſcapement, and the errors will be four or five times leſs in mine than in the Anchor-Scape; and I ſuppoſe this

this cannot be got over. But if I have misrepreſented any thing in either Scapements, it was not my intention to do ſo; therefore hope for pardon, and can only wiſh the Society to conſider my new-invented Eſcapement in the ſame light as they would wiſh others to conſider one of their own invention.

JOHN PRIOR.

Nesfield, near *Skipton*,
Craven, *Yorkſhire*.

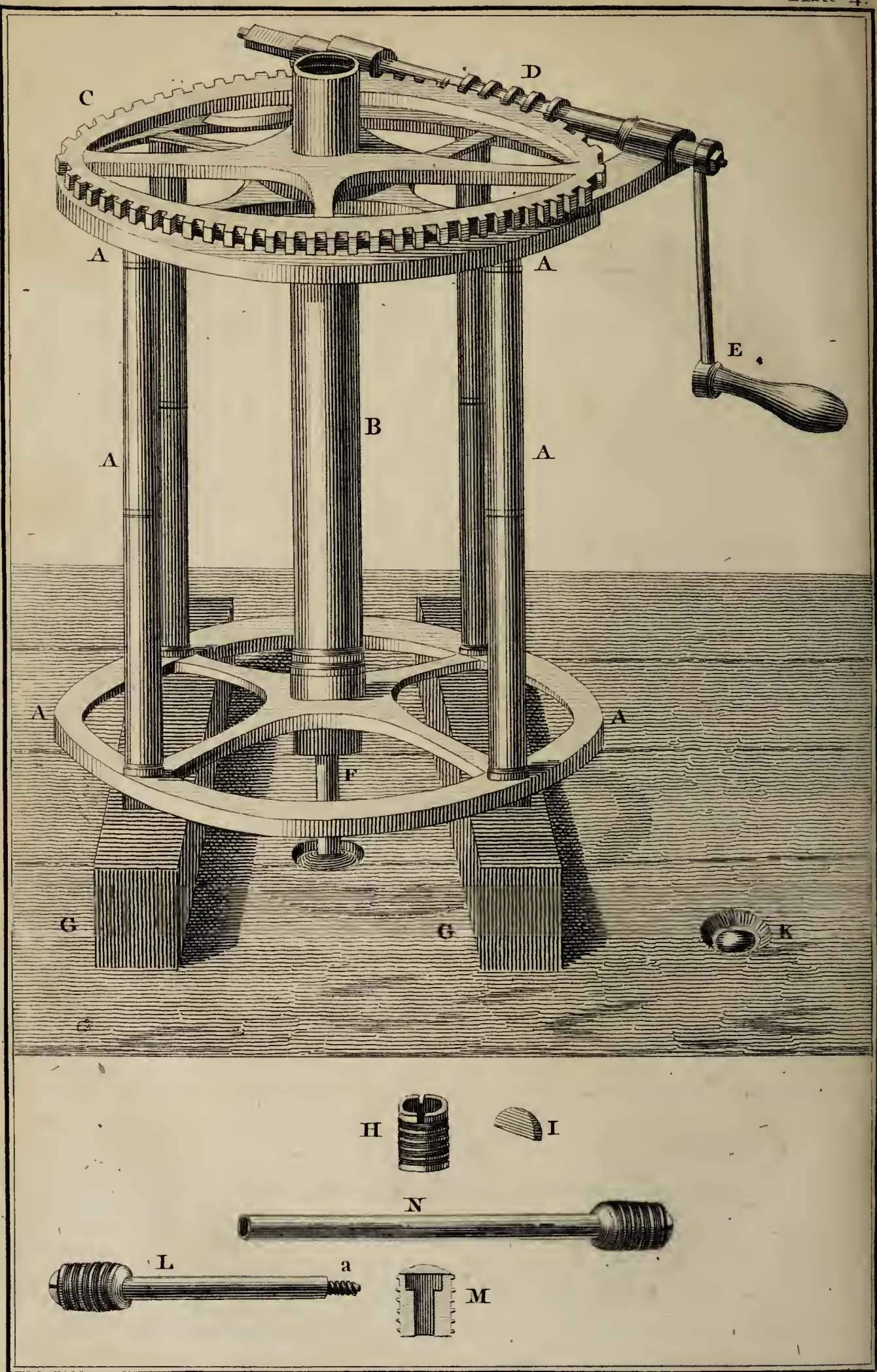
Mr. MORE.

The

The GOLD MEDAL was this Seſſion adjudged to Captain WILLIAM BOLTON, of the Navy, for his Invention of a MACHINE FOR DRAWING BOLTS IN AND OUT OF SHIPS, a Model of which is reſerved in the Society's Repoſitory, and a Plate and Deſcription are hereunto annexed.

SIR,

I SHALL be much obliged to you to lay the accompanying Model of a Machine for Drawing Bolts in and out of Ships, before the Society for the Encouragement of Arts, &c. truſting it will meet with the Society's approbation. One of your Premiums, I believe, is for a Machine for *Driving* Copper Bolts; *drawing* them in, I hope will be ſucceſsful.—I was induced to turn my thoughts to inventing a mode of Drawing Bolts out of Ships, from daily ſeeing the great difficulty of extracting them. A



Capt. Wm. Bolton's new invented Machine for drawing Bolts in and out of Ships.

Mr. Hill, I believe, has already preſented the Society with a plan for that purpoſe; but, notwithſtanding the ingenuity of his mode, I flatter myſelf mine will be found an improvement, as it can be eaſily worked, in very little room, and will generally bring the Bolt out uninjured.

I remain

Your reſpectful ſervant,

WILLIAM BOLTON.

Mancheſter-ſtreet, No. 50,
Feb. 26, 1798.

Mr. MORE.

REFERENCES *to the* PLATE *of* CAPTAIN BOLTON'S MACHINE.

A A A A A A, the frame of the Machine. B, a cylindrical tube, having a female ſcrew in the inſide. C, a wheel with teeth attached to the cylinder B. D, an endleſs ſcrew adapted to the wheel C. E, handle of the winch. F, the Bolt drawing out. G G, blocks to ſupport the frame. H, a hollow

a hollow piece of ſteel, having on its outſide a male ſcrew, whoſe threads work within the female ſcrew in the cylinder B. To this piece of ſteel the Bolt is to be rivetted. I, a ſemicircular piece of ſteel, which is to be introduced into the notches on H, when a ſimilar notch has been cut in the head of the Copper Bolt, which by this means is prevented turning in H, while drawing. K, the Bolt, as prepared to receive the Machine. L, a ſteel bar, ſomewhat ſmaller than the Bolt to be drawn, having at one end a male ſcrew, A, and at the other end another male ſcrew that fits into the female ſcrew in B. M, a ſection of a male ſcrew, having a ſquare hole larger than the Bolt. N, a Bolt with a male ſcrew at one end ready to be drawn in.

The Machine, of which a Plate is annexed, conſiſts of a frame ſupporting a cylindrical female ſcrew tube. On this tube is mounted a wheel, with teeth adapted to an endleſs ſcrew, fitted to the frame, and worked by a handle.

To draw the Bolt out.

The head of the Bolt muſt be cut off, and a hole made in the timber big enough to receive the male ſcrew H, which is put over the Bolt: a ſlit is then to be made, either by a ſaw or cold chiſſel, in the head of the Bolt, to receive the key I, and which correſponds to the ſlit in H: the Bolt head is then to be rivetted as firmly as poſſible upon H: the cylindrical tube, B, is then to be ſcrewed on, turning the whole Machine round till it can be done no longer, when the endleſs ſcrew is to be uſed. If the Machine is of a proper ſtrength, and the rivetting well done, the power is ſuch as to extract the Bolt or break it, but generally it will be drawn out uninjured.

To draw Bolts into Ships.

It will be neceſſary to have a bar, L, which I recommend to be made of ſteel, long enough to paſs from the inſide to the outſide of the ſhip, and ſomewhat ſmaller

than the Copper Bolt intended to be drawn in. This may be called a conductor. On one end ſhould be a male ſcrew, *a*; the Bolt to be drawn in ſhould be tapped at one end to receive the male ſcrew, *a*, on the conductor, and at the other end ſhould be another male ſcrew that fits into the female ſcrew in B; after which the operation is the ſame as drawing a Bolt out, and the Machine ſhould be applied accordingly. When the Bolt arrives at its deſtined place, it may be ſecured on the inſide by a nut, which is as good a way of faſtening as clinching, and much more expeditious.

This Machine, though only of the height of eighteen inches, will draw Bolts in or out of any length; for, after the Bolt has riſen to the top of the tube, it will only be neceſſary to ſcrew the Machine back, and follow up the work with blocks of timber, as repreſented in the drawing.

Note. If the upper part of the hole in H be made ſquare, larger than the round

hole

hole as ſhewn at M, and the head of the Bolt rivetted into it, it will do away the neceſſity of the key, I, render the Machine leſs complicated, and ſave much time and trouble.

WILLIAM BOLTON.

PAPERS

IN

COLONIES AND TRADE.

COLONIES AND TRADE.

In conſequence of the following Communication from Mr. ALEXANDER ANDERSON, relative to the Culture of various uſeful Plants in the Botanic Garden in the Iſland of St. Vincent, the Society this Seſſion voted to him their SILVER MEDAL, and elected him a Correſponding Member; and the Catalogue of the Plants growing in that Garden, mentioned in Mr. Anderſon's Letter, is reſerved in the Society's Library.

SIR,

AS the Society for the Encouragement of Arts, Manufactures, and Commerce, countenance and encourage the introduction and cultivation of uſeful Plants in the Britiſh Colonies, it may probably be acceptable to have ſome information rela-

tive to His Majesty's Garden in this Island, established by General Melville, above thirty years ago; I therefore take the liberty of transmitting you a Catalogue of Plants in it, and the present state of some of the most valuable, which, if you think not foreign to their views, I beg the honour of your laying them before the Society.

I am, SIR,

Your most humble servant,

ALEXANDER ANDERSON.

Botanic Garden, St. Vincent,
Jan. 24, 1798.

SAMUEL MORE, Esq.

STATE *of some of the most valuable* PLANTS *in His Majesty's* BOTANICAL GARDENS *in the Island of* St. Vincent, *December* 24, 1797.

ARTOCARPUS INCISUS.—*Otaheite Bread-Fruit.*

In June 1793, of the original plants fifty were reserved in the garden, to yield future supplies

ſupplies for the different iſlands; of thoſe few were two feet high, or half an inch diameter in the ſtem; moſt of them from ſix inches to a foot in height. In October 1794 ſome began to produce fruit; in March following all of them. At preſent moſt of the trees are about thirty feet high; the ſtem two feet from the ground from three to three feet and a half in circumference.

The fruit comes out in ſucceſſion the greater part of the year; from November till March fewer than at any other time. But as there are ſix varieties of the tree and fruit in the garden, ſome kinds are loaded, whilſt there is ſcarcely any fruit on the others; ſo that ſome one of them is always in fruit. The number one tree produces is very great, often in cluſters of five or ſix, bending the lower branches to the ground. According to the different varieties, the fruit is of various ſhapes and ſizes, in weight from four to ten pounds, ſome ſmooth ſkinned, others rough or tuberculated; taken from the tree before maturity, the juice is of the colour and conſiſtence of milk, and in taſte

ſomething

ſomething ſimilar. It iſſues for more than ten minutes in a continued ſtream, and thickens into a glutinous or adheſive ſubſtance.

The fruit is in the greateſt perfection about a week before they begin to ripen: at that period it is eaſily known, from the ſkin changing to a browniſh caſt, and from ſmall granulations of the juice. When ripe it is ſoft and yellow, in ſmell and taſte like a very ripe melon: in that ſtate, hogs, dogs, and poultry, are fond of it. When half grown, boiled, it is good food for hogs and poultry. For Bread, the beſt mode of dreſſing, is baking it entire in an oven as Bread; when properly done, and laying aſide prejudices, with a little cuſtom, it is equal to, if not better than any kind of Bread, as it is lighter and very eaſy of digeſtion. Boiled, like yams, it is very good, and by many preferred to being baked. Negroes either eat it in that condition, or cut it in half, and roaſt it in the aſhes. It may be ſliced the ſame as Bread, and toaſted on a gridiron

gridiron. For a pudding, ſcarcely any thing equals it. After baking or boiling, formed into a maſs like dough, and then baked as biſcuit, it is nearly the ſame as biſcuit, and will keep as long.

From the firſt appearance of the fruit (when of the ſize of an egg), it is three months before they are full, or fit for eating. Having no formation of ſeeds, the tree produces its progeny by ſuckers from its roots, at the time it begins to yield its fruit; and a large young family ariſes, at the diſtance of three to thirty feet from the parent ſtem. For two years paſt ſeveral hundreds of them have been tranſported to the different iſlands.

Independent of its utility, the tree is one of the handſomeſt, and for ornament would be anxiouſly ſought after in any country. It is hardy, a tough wood, and reſiſts the ſevereſt guſts of wind.

Beſides the Otaheitan, Captain Bligh brought from Timor ſome plants of the Eaſt-India Bread-Fruit, two of which he left in the Garden. Although the fruit is

eſculent, yet is it far inferior to the other, and a bad ſubſtitute. It is ill-ſhaped, and of a ſoft pulpy ſubſtance; it has no ſeeds, but propagates itſelf as the former does.

The ſeed-bearing kind, in its external habit, is hardly to be diſcriminated from the true, yet in fruit differs very much from it, containing no eſculent ſubſtance but its ſeeds, in number from forty to eighty, and ſometimes one hundred; in appearance like cheſnuts: when roaſted or boiled, they are preferred, by many people, to Bread-Fruit. Negroes are very fond of them.

The fruit is nearly the ſize of the Bread-Fruit, and is covered with prickles like a hedge-hog. As the ſeeds readily vegetate, Nature has no occaſion for the puſhing up plants from the roots, as in the Bread-Fruit. Previous to the arrival of the Providence, a young plant of it was ſent to the Garden from Martinico for the true Bread-Fruit. It grows as faſt, and gives fruit as ſoon, but riſes to a larger and ſtronger tree. In the French Iſlands it is known by the name *Chataignier du Malabar*.

LAURUS

LAURUS CINNAMOMUM.—*Cinnamon*; Three Kinds.

One of them has been common in the French Iſlands for many years, and was introduced into the Garden, near thirty years ago, by Dr. Young. It is the *Laurus Cinnamomum* of Jacquin, which he found in the woods of Martinico, and conjectures to be the ſame as the Ceylon Cinnamon. Although in ſome parts it has a great affinity with the true Cinnamon, yet on the whole it ſeems eſſentially different.

The leaves have the greateſt affinity, and the greateſt part of its property ſeems concentrated in them. They ſmell and taſte ſtrong of Cinnamon, and, for culinary purpoſes, are a good ſubſtitute.

The bark of thoſe branches of the ſize and age from which the fineſt Cinnamon is obtained, poſſeſſes nothing but a rough aſtringent taſte: that from the old trunk, which is very thick, is ſometimes ſtrong of the ſpice. The thin membrane next to the

wood is pleaſant, but difficult to ſeparate from the thick brittle bark.

Whether or not this is the *Caſſia lignea*, or the true Ceylon Cinnamon degenerated through neglect, I cannot determine; be that as it will, it is no occidental plant, as it has no affinity with, or habit of, the American ſpecies. It undoubtedly has been introduced from the Eaſt into theſe Iſlands. Jacquin might naturally take it for an indigenous plant, not adverting to its propagation by birds. Birds are fond of the ſeeds, and may readily diſſeminate them in the woods: they have been inſtrumental in rendering many foreign plants common in theſe Iſlands.

From three ſmall trees, found in the Garden in 1785, one hundred trees are at preſent producing ſeeds. It is ſomething ſingular that it can only be increaſed by ſeeds, whereas the other two kinds grow as readily by layers and by cuttings as by ſeeds.

It is an erect handſome tree, from fifteen to twenty feet high, with compact erect branches, and thrives in any ſoil or ſituation.

The leaves are of an oval-ſpear ſhape, with three longitudinal ribs, united above the baſe *(triplinervia)*; the under ſide of a yellow colour.

The two other kinds were introduced from the Eaſt Indies by the French, in 1785 and 1786. A plant of each was ſent to the Garden in 1787. The firſt was from Martinico, by a Gentleman, then a correſpondent and fellow-labourer for the true Ceylon Cinnamon. It was four inches high, and proſpered remarkably well; ſo much ſo, that at preſent there are thirty young trees producing ſeeds, with nurſeries of ſeveral hundred young ones, excluſive of thoſe already ſent to the different iſlands. It grows erect with the former: the branches are ſhorter and more compact, forming the ſhape of a cone.

The

The leaves are oval, with three longitudinal ribs; ſometimes five are united at the baſe: the under ſide is of a ſea-green colour.

It readily grows from cuttings and layers, as it alſo does from ſeeds. From branches of three and four years old the bark is very fine. It ſeems beſt when the ſap is in greateſt plenty, or riſing, and is then eaſily peeled off: at other times it ſtrongly adheres to the wood. During the operation, the juice ſqueezed out is whitiſh, and rather inſipid. It acquires ſtrength in drying; but whether it is beſt dried in the ſun or the ſhade, I cannot determine; but ſpecimens, done both ways, accompany this Paper. The leaves are hot and biting, and taſte much of the Clove, but little of the Cinnamon.

The third ſort was alſo a ſmall plant, ſent to the Garden for the True Cinnamon, by a Gentleman in St. Lucia, in return for plants ſent him from the Garden. He obtained it from the Captain of a frigate

from

from the Iſle de France bound to St. Domingo, with a cargo of valuable plants, but put in there for refreſhments. The leaves of this kind are broad, of an oval oblong ſhape, with five diſtinct ribs united at the baſe; the under ſide a yellow green: they ſmell and taſte as thoſe of the former kind. Its bark ſeems to be the beſt of the three; and its habit, or mode of growth, differs very much from the former two. It rarely grows above eight feet high, if left to nature, but divides, near the ground, into very long ſlender branches, ſpreading horizontally: the lower ones are procumbent, but they may be trained up ſtrait. The branches, however, are always much longer, more ſlender, and with fewer ſecondary ones, than the others. It has the appearance of another ſpecies.

CARYOPHYLLUS AROMATICUS.—*Clove.*

The firſt plant was received from Martinico, at the ſame time as the Cinnamon. As it is a very tender plant while young, it

was frequently loſt when three or four feet high, and ſuppoſed out of danger, but was fortunately preſerved by layers, one of which at preſent is ſix feet high, and healthy. This, with ten other young plants, are all the Garden as yet poſſeſſes.

The leaves are ſtrong of the Clove, and retain their ſtrength after drying. For culinary intentions they are a ſubſtitute.

At what age or ſize the plant produces ſeeds, as yet I am ignorant.

Specimens of the different kinds of Barks, mentioned in the foregoing Paper, are reſerved in the Society's Repoſitories.

The

The Thanks of the Society were this Seſſion given to Mr. SIEVERS, of Bauenhoff, in Livonia, the Author of the following Paper, on the Manner of REARING AND TREATING SILKWORMS in the Northern Parts of Europe; and the Society, in conſequence of this Communication, elected him one of their Correſponding Members.

SIR,

THE principle that induced me to trouble you with this letter, will, I hope, ſerve for an apology, and gain your indulgence.

Not till late in this autumn the thirteen volumes of the Tranſactions of the Society for the Encouragement of Arts, Manufactures, and Commerce, came to my hands. I peruſed them with ſo much the more pleaſure, as I remember, while in England,

in my younger years, the firſt exiſtence and ſudden riſe of this uſeful Society, by the public ſpirit of Mr. Shipley, whoſe name was ever ſince reſpectable to me.

I dare not intrude on your time, ſo uſefully employed for the public good of your Country, to expatiate on the many articles I moſt admired, but eſpecially the encouragement of Plantations, by which the Society will be the benefactor of ages to come: yet one article ſtruck me, for its not anſwering the expectations and repeated laudable exertions of the Society; I mean, the Cultivation of Silk and the Mulberry-tree, an object ſo worthy the Society's attention.

I will venture to juſtify the trouble I am going to give you, Sir, by this long letter, in ſaying ſomething which may appear of ſome uſe on that ſcore. You will ſmile to hear a man living under the 58th degree of latitude, and ſo much to the Eaſt as beyond the Baltic, ſpeak of the Cultivation of the Mulberry-tree and rearing of Silkworms; yet I hope to win your indulgence, perhaps

your

your candid approbation of ſome of my thoughts. Many thouſands of Engliſh Nobility and Gentry travelled, rambled, even lived, in Italy and the South of France; numbers of them I have ſeen and known there; but none cared to enquire about the Silkworm, and its prodigious work: amuſements chiefly took up their time; of a few, antiquities, ſtatues, paintings, of which, be it ſaid to their honour, no nation has made ſo rich a harveſt on the hungry Italians, preying on the wealth of the Engliſh travellers.

But to come to the Silkworms.—While I ſerved, in the year 1758, in the Ruſſian Army, in Pomerania, particularly near the coaſt of the Baltic, I had the good luck, being quarter-maſter general of a diviſion, to ſhare a conſiderable corn field of a gentleman; this produced an acquaintance with the owner: having ſeen there many plantations of Mulberry-trees, of both ſorts, he told me their uſe, and ſhewed me

their produce. I requeſted ſome ſeeds of both, and the model of a ſpinning-wheel.

Some of the ſeeds were ſown at a villa near St. Peterſburgh, belonging to an uncle of mine; they always froze to the earth; yet in the following years would riſe as high as three or four feet, in ſeveral branches, and give, with a few larger trees in the green-houſe, food for three thouſand Silk-worms, which gave near a pound of ſilk. But this eſſay had no followers, and is now no more.

Another part of the Pomeranian ſeed was ſown next ſpring at my then living father's eſtate, where I now live, in Livonia, about eighty-five Engliſh miles north of Riga. The froſts took always half of the year's growth. They were planted in a couple of borders, and kept under the ſheers, then much in uſe, as formerly in England. No uſe was made of the leaves. When I retired from publie life, I found no more than forty-five trees, or rather buſhes, ſtanding in one row, two feet aſunder; I tranſplanted every ſe-

cond

cond or third tree, by which I loſt three trees: I made ſucklings, and have more than a hundred low ſtandard trees by them; cuttings I never attempted, miſled by a German author, who aſſured me they would not take.

I wrote for ſome ſeeds from Berlin, of the White Mulberry, of which I had many thouſand plants: being no botaniſt, I am not ſure they are of the White, though they have leaves much more ſmooth and tender than my old trees.

The ſeedlings roſe a foot in the firſt year, but froze to the ground; the next they roſe to two feet, of which more than a foot was loſt by the next winter; ſo they did the third year: then I tranſplanted them, partly in rows in beds, one foot aſunder, others in ſundry places of light middling land. I gave many hundreds to ſeveral ladies, who, hearing of my Silkworms, were curious to have the plants. A lady near the town of Dorpat, near a hundred miles to the north-eaſt, rears already a couple of thou-

ſand Silkworms, and has a ſhawl embroidered with her own ſilk of natural colours. Thoſe planted in rows and beds were, after two years, planted for good, in different places, even in the field; of theſe, having no ſhelter, ſome have ſuffered more than thoſe which were protected by buildings or other trees.

I made no uſe of my Mulberry-leaves, till five years ago. Travelling in White Ruſſia, or to be more explicit, in the Government of Polotzk, on the borders of the River Duna, about one hundred and fifty miles to the eaſt of Riga, conſequently ſomewhat colder, I found ſome ladies ruffling cocoons, having, as they ſaid, no ſpinning-wheel; the cocoons were ſpun there the ſame ſummer. The mother of theſe ladies being from the ſouthern borders of former Poland, had brought young Mulberry-trees from thence, which I ſaw thrive very well, being ſtandard trees of above fifteen feet high, and, near the ground, of about three inches thick.

They gave me a ſheet of paper with ſome eggs: the next year I had near three thouſand worms ſpinning. A German pamphlet from Berlin ſerved me for inſtruction, and to make a ſpinning-wheel, for my Pomeranian model was loſt. I had ſuch a great call for cocoons, that, inſtead of near a pound, which I might probably have had, I got but ten ounces of Silk, taking eight or nine cocoons to a thread. I ſent ſome of the Silk to her Imperial Majeſty, of glorious memory, ſhe being a great promoter of all ſorts of induſtry. I received a moſt gracious letter of thanks from her hand: I ſent likewiſe ſome Silk to the Society of Economy at Peterſburg, whoſe Preſident, Count Anhalt, wrote to me a letter of thanks and approbation. For myſelf, I got a pair of knitted white ſilk ſtockings, having no loom for weaving in this neighbourhood.

The two following years about the ſame number were reared, though more might have been ſo. The ſucklings of my old trees tranſ-

planted

planted beginning to give a pretty deal of leaves, this year I expected to have had eight thouſand; but being obliged to make a journey in the beginning of May to the ſouthern parts of Ruſſia, beyond Kiovia, which journey took up the whole ſummer, the young lady I intruſted with rearing my Silkworms, full of eagerneſs to the purpoſe, expoſed the ſheets with the eggs to the ſun too ſoon: when the leaves had ſcarce begun to break, overjoyed at the prodigious nnmber that crept out, ſhe forgot my preſcription, counted more than ſixteen thouſand at the third ſkinning; but the trees were then almoſt bare of leaves; ſhe could not reſolve to throw one half away, to ſave the other; ſo moſt of the poor animalcula died, and ſcarce two thouſand remained, which gave much ſmaller cocoons than in the former years. I am even in danger of loſing my old trees, for they ſeem weakened by being ſtripped too much. Moſt of my old trees, which are rather buſhes of about ſix, ſeven, or eight feet, branching

branching from the ground, are of the black ſort, bearing very ſmall fruit, much ſmaller than in England: but thoſe I take to be white ones, do not bear any. I ſtill take them to be ſuch, becauſe they ſuffer ſomewhat more by the froſts, and the little creatures eat their leaves more eagerly than from the others.

No inſects I ever remarked on either: the Reverend Mr. Swayne's remarking ſome earwigs, is a phænomenon I never heard of in Italy, nor this ſummer at Kiovia, nor found it in any book.

From theſe premiſes, Sir, methinks we may venture to draw the following outlines of what might be proper to come nearer to the uſeful and extenſive aim of the Society.

I. That the White Mulberry-tree is the only one that will produce Silk. The quotation, page 191, in your Tenth Volume, of Mr. Hanway's Travels, a man of known veracity, I can aſſure to be true, by what I have heard of a gentleman who lived many years at Aſtrachan, and had con-

nexions

nexions with the Armenians, who are the principal traders with Perſia and Perſian Silk, an article increaſing yearly, for the uſe of the manufactures at Moſcow. The Perſian Silkworms, as thoſe in Italy and the South of France, feed moſt certainly on the White Mulberry leaves alone. This is confirmed by the ingenious and indefatigable Mr. Arthur Young, in his Travels in the South of France and Lombardy, as quoted by Mr. Swayne, which I have read in his works; and Mr. Bertezen affirms the ſame; while what he gives as his own opinion is evidently fallacious, if not ſet forward on purpoſe to miſlead. No doubt the Worms will live on the Black, but will not thrive, nor give any other but indifferent Silk. I therefore think, that for a complete eſtabliſhment and producing Silk, this being the laudable aim of the Society, the White Mulberry alone ſhould be raiſed, uſing the Black, exiſting of old in England, for its fruit, only as a neceſſitous nouriſhment, degrading the quality and value of the

Silk.

Silk. As a further proof I muſt add, that the Oragazine Silk, the beſt Europe produces, owes its excellence to the particular kind of White Mulberry-trees, of which the branches are grafted on thoſe raiſed from ſeed. I remember to have heard, and even read ſomewhere, that they get, by way of ſmuggling, the branches to France, to graft the trees in Provence, Dauphiné, and Languedoc: Premiums will bring them as certainly to England.

II. That the White Mulberry-tree will thrive moſt certainly in England and Wales, and even in Scotland as far as Edingburgh, as a middling ſtandard-tree. The Black and the White will do, though this leſs flouriſhingly, as far as the moſt northen coaſts of Scotland, perhaps not as a ſtandard-tree, but certainly as a large buſhy ſhrub, as my old trees are here. My trees, from ſucklings and ſeeds, are trained as ſmall ſtandard-trees, the ſtem or trunk only four or three feet. To judge by the latitude, the White Mulberry will thrive in Ireland as well as in

England

England; but the ſeeds ſhould not be taken from France nor Italy, nor any warmer clime. I would propoſe to get them by Stetten from Pomerania, and from Berlin; nay, I have been aſſured ſome may be had from Koningſberg in Pruſſia: care muſt be taken to diſtinguiſh the two ſorts. The White one may be got too from Dreſden and Leipzig: the ſeed of the Black in England will do for the northern parts of England; but for Scotland I ſhould rather obtain them from Pomerania and Pruſſia.

III. That the ſeeds ſhould be ſown in plain but light garden-land, rather ſomewhat ſandy, without any dung whatever. The Rev. Mr. Swayne, in your Tenth Volume, gueſſes right when he attributes the loſs of his plants to the dung.

IV. That I doubt the mode of cuttings to multiply the Mulberry-tree. I will make, next ſpring, a trial in land, and in a green-houſe without heat; yet I think it a miſtake: but from Seeds, the aim being univerſal, it ſeems more eligible, eſpecially

if

if taken from a northern clime, as propoſed above.

V. That, to all thoſe that will undertake to raiſe Silkworms, an exceſſive cleanlineſs ſhould be recommended: no draught of air, no ſmoke, qualm, damp vapour, or exhalation whatever, ſhould come near them; no ſickly perſon approach them.

VI. That no ſun-ſhine, but only a temperate or broken light, ſhould come upon them; the heat of the room ſhould be between twelve and fifteen of Reaumur: airing more than once, eſpecially in the morning, is neceſſary. The room ſhould have ſhutters, to ſecure them from the effect of thunder and lightning; conſequently the bringing them into the air, as propoſed by the Rev. Mr. Swayne, I dare not adopt; beſides, the carrying the apparatus into the garden, and back into the houſe, is an unneceſſary labour, requiring hands. The apparatus is really a good one, reſembling ſome I have ſeen formerly in Italy, and this laſt ſummer beyond Kiovia, at two eſtates

of

of Field-Marſhal Count Raſoumouzky, who has Mulberry plantations, and got this ſummer about twenty pounds of pretty good Silk.

VII. That the rearing of Silkworms will take no labourer from the field, nor from any manufacture: it will employ only an elderly woman and a couple of children, of twelve, thirteen, or fourteen years of age, the gathering of the leaves excepted, which will employ one lad of fifteen; all theſe will rear thirty thouſand Worms, or more, in the term of ſix or ſeven weeks, producing ten pounds of Silk.

VIII. That for the Mulberry-tree no good land is required, but ſuch as will grow the moſt common trees on dry land; nay, I will venture to aſſert, they will grow on Blackheath, on Hounſlow-heath, on Finchley Common, and even on the barren Marlborough Downs. To theſe hints I muſt add, for the further encouragement of induſtry, that I found, this ſummer, at Kiovia, a poor taylor, a native

native of Upper Sileſia, who having a ſmall houſe overagainſt the Mulberry-Garden planted by Peter the Great, and having ſeen the rearing of Silkworms in his native country, began three years ago to rear ſome with the leaves of that Garden. Laſt year he delivered twenty-five pounds of Silk to the Director of the Imperial Garden there, who paid him, by order of the Empreſs, ten rubles a pound. I viſited him as a man of deſert: I found his houſe, about twenty feet ſquare, partitioned into four ſmall rooms; in the corner of one of theſe I found a dozen ſacks, of about three buſhels each, filled with as large and fine cocoons as I have ſeen in Italy, and much finer than my own; of theſe this induſtrious man hoped to get thirty pounds of Silk. Except the men and boys he employed to gather the leaves, he had for his work to take care of his Worms, whoſe number he rated to be near a hundred thouſand, no more help than his wife, an elderly woman, and three children, of twelve, thirteen, and fourteen years of age.

As another proof how encouragement raiſed induſtry in a ſimilar object, I muſt add, that in the Pruſſian dominions Mulberry-trees were planted by order of Frederick William, father to Frederick II. A few hundreds of pounds of Silk were made yearly. This laſt King neglected the object in the firſt twelve years of his reign; the years 1750, 1751, and 1752, produced together no more than one hundred and fifty pounds. Count Hertzberg got the care of it. Though taken up with miniſterial affairs, he found the object ſo intereſting, encouraged the ſame with ſuch zeal, gave even medals out of his own pocket, that an incredible augmentation enſued. In the year 1794, when he died, fourteen thouſand pounds of Silk were delivered into the Berlin manufacture, proved to be Pruſſian Silk. Great Britain and Ireland would outdo them very ſoon, if ſteps were taken to procure Mulberry ſeeds and plantations, and that the known public ſpirit of the Nation would turn its attention

to

to that object, and make it a national one.

As a third and laſt proof, permit me, Sir, to add, that the late Empreſs, hearing that ſome Mulberry-trees, planted by Peter the Great, on an Iſland in the Wolga, near Czaritzin, were grown to a great height, and augmented by nature, ſhe placed there a Colony of Ruſſians, to the number of four hundred males (the place called Achtouba); gave them ten years exemption from impoſts, after which they were to pay their capitation and impoſts in Silk, at ten rubles per pound. The firſt Ribbon of the newly inſtituted military Order of St. George, was of that produce; and though the ſame was coarſe, ſhe ſaid, ſmiling, ſhe never wore a finer to her mind. From the Silkworms produce, give me leave, Sir, to ſay a few words of a Plant which ſeems to be akin to them; it is the *Aſclepias Syriaca*, mentioned in Miller's, Mawe's, and Abercrombie's Dictionaries, as a perennial plant in England: I found it

this ſummer in an apothecary's garden in Kiovia; was ſurpriſed to find its produce ſo much reſembling the Silk; and that in Upper Sileſia manufacturers exiſt that cultivate this plant, and ſpinning its ſort of Silk with Cotton, produce a Silky Stuff. According to a calculation I have ſeen, half an acre will produce, in the third year, the value of ninety rix-dollars, and ſo on. Here I ſhould conclude; but, with a heart full of grateful feelings to a happy country, where I paſſed ſeven of my younger years, being attached to the Ruſſian embaſſy, I muſt aſk you a few queſtions, that may perhaps prove not unworthy the attention of your truly patriotic Society.

Is the Pinus Cembra, or Siberian Mountain Pine, or Siberian Cedar, known to you? It is a very fine tree in appearance, and very valuable by its fruit and timber; I find it both in Miller's, Mawe's, and Abercrombie's Dictionaries; and methinks I have ſeen it at Chelſea, under the name of a Cedar. The fruit grows in their Pine-

apples,

apples, in numerous ſmall ſweet kernels: it is offered as a delicacy in every citizen's houſe in Ruſſia; but thoſe kernels will not do for vegetation, becauſe they are dried in the oven to get them out of the apple. This tree would be an excellent acquiſition, for Scotland in general, and for the Engliſh parks in particular. Its needles are longer and darker than thoſe of the famous Weymouth Pine: its home is on the mountains that ſeparate Siberia from Caſan, or rather Europe from Aſia.

Is the Archangel Larch-tree known to you? All the men of war built at Archangel are of that timber. I have ſome of eight years old in my garden that are fifteen feet high; the three laſt years they roſe ten feet. I am curious to know from whence came the ſeeds of Larch planted in England and in Scotland. I do not believe them at home in Scotland, becauſe in Ruſſia, in the Government of Olou, formerly of Noogrod, the Larch-tree begins to grow with the ſixty-third degree of latitude: near Arch-

angel, and on the borders of the White Sea, I have ſeen Larch-trees that would ſerve for maſts. Should the Engliſh plantations be from thence or America, or from the Alps?

Why do not the Society offer a Premium for the cultivation of the Weymouth Pine in particular, that tree being in ſuch repute for its ſpeedy growth; furniſhing even maſts to the navy? Why not for ſeveral Timber and Walnut Trees, eſpecially the Black with round, and the other with the oblong fruit? Why not for a number of other American trees and underwood, eſpecially the *Pſeudo-Aca*, ſo renowned in Germany for its rapid growth as ſuch?

All theſe are well known in England, as I ſee by liſts of the gardeners who ſell plants; I know them by three claſſical works in German; one publiſhed at Gottingen, 1789, by Mr. Wangenheim, who ſerved as Captain in the Hanoverian troops all the American war; the other, of the late Profeſſor Du Roy, who directed for

many years the extenſive and ſucceſsful plantations of Mr. Veltheim, between Brurvis and Magdeburg; third, of Mr. Burgſdorff, at Berlin, who has extenſive plantations near that town, and carries on a great trade with American and German ſeeds. Theſe works would be worth your peruſal, if you are acquainted with the German language.

To compenſate with ſomething the perhaps too tedious length of this letter, I muſt tell you, Sir, how the public ſpirit of your reſpectful Society turned to the advantage of a diſtant nation. The Society's ſpirited exertions, and publiſhed Premiums, gave the firſt idea and riſe to the Free Economical Society at St. Peterſburg, inſtituted in the year 1766. The late Empreſs, reading the Engliſh news-papers, bid one to explain to her many of the Society's Premiums, with which ſhe was ſo much pleaſed, that ſoon after a Society of fifteen diſtinguiſhed perſons united, with her approbation, who choſe ſoon after many mem-

bers more, of whom I had the honour to be of the firſt, being then Governor of Great Noogrod. The Society exiſts, and has promoted many very uſeful objects; but not being in ſuch affluent circumſtances, by the aid of the public, their exertions fall ſhort of thoſe of the Engliſh Society.

This letter proves the due regard with which I am,

SIR,

Your moſt obedient Servant,

J. SIEVERS.

SAMUEL MORE, Eſq.

Secretary to the Society for the Encouragement of Arts, Manufactures, and Commerce, at London.

REWARDS

REWARDS

BESTOWED BY THE

SOCIETY,

From October, 1797,

To June, 1798.

REWARDS

BESTOWED IN

AGRICULTURE.

Class 34. TO JOHN SNEYD, of Belmont, in Staffordshire, Esq. for having planted eleven thousand Larch-trees in the years 1794 and 1795, the GOLD MEDAL. See page 117.

To JOHN PHILLIPS, of Ely, Esq. for Observations on planting Osiers, the SILVER MEDAL. See page 129.

Class 101. To Mr. THOMAS JONES, of Fish-Sreet-Hill, for having raised three thousand and forty plants of the Rheum Palmatum, or True Rhubarb, THIRTY GUINEAS. See page 213.

Culture

Claſs 90. To Mr. JOHN EXTER, of Pilton, in Devonſhire, for his account of the Comparative Culture of Turneps, the SILVER MEDAL and TEN GUINEAS. See page 182.

Claſs 107. To JOHN PEART, Eſq. of Settle, in Craven, Yorkſhire, for having improved fifty-ſix acres, three roods, twenty-three poles, of Land lying waſte, the SILVER MEDAL, and TWENTY GUINEAS. See page 232.

IN POLITE ARTS.

Claſs 173. To the RIGHT HONOURABLE LORD GRANTHAM, for a Drawing; View of Fountain's Abbey, Yorkſhire; the GOLD MEDAL.

Claſs 177. To Mr. CHARLES HENRY PARRY, for a Drawing; Portrait of his Siſter in the character

ter of a little Gleaner; the GOLD MEDAL.

Claſs 178. To Miſs ELIZABETH WALLS, for a Drawing; Samuel, after Sir Joſhua Reynolds; the SILVER MEDAL.

Claſs 179. To Miſs ELIZA BARRETT, for a Drawing; View of Richmond Bridge; the GOLD MEDAL.

Claſs 180. To Miſs MARY ANN MASTER, for a Drawing; Portraits of a Family; the SILVER MEDAL.

To Miſs COLLET, for a Drawing of Birds, after Nature; the SILVER MEDAL.

Claſs 182. To Mr. WILLIAM FRANCIS ENGLEHEART, for a Drawing of Outlines; Sampſon ſlaying Philiſtines; the LESSER SILVER PALLET.

Claſs 184. To Mr. WILLIAM WESTALL, for a Drawing; View

of the Cottage in Hyde Park; the LESSER SILVER PALLET.

To Mr. BENJAMIN COOPER, junior, for a Drawing of Temple-Bar, the LESSER SILVER PALLET.

To Miſs FRANCES TALBOT, for a Painting after Andrea del Sarto; ſubject, a Holy Family; the LESSER SILVER PALLET.

To Miſs KNIGHT, for Works executed in Tow and Leather, the SILVER MEDAL.

To Mr. CHARLES NESBITT, for a Print of St. Nicholas' Church, in Newcaſtle-upon-Tyne, cut on wood, the LESSER SILVER PALLET.

To Mr. TIMOTHY SHELDRAKE, for his Diſſertation on an improved Proceſs in Oil-Painting, the GREATER SILVER PALLET. See page 279.

IN

IN MANUFACTURES.

To Miſs DUKE, for Samples of Needle-work, one of which remains with the Society for the inſpection of the Public, the SILVER MEDAL.

IN MECHANICKS.

To Mr. GEORGE JEE, for his improved Mangle, the SILVER MEDAL. See a Plate and Deſcription, page 303.

To Mr. JOHN PRIOR, for his improved Eſcapement for Watches, THIRTY GUINEAS. See a Plate and Deſcription, page 306.

To CAPTAIN WILLIAM BOLTON, of His Majeſty's Navy, for his invention of a Machine for Drawing Bolts in and out

out of Ships, the GOLD MEDAL. See page 318.

IN COLONIES AND TRADE.

To Mr. ALEXANDER ANDERSON, for promoting the Views of the Society, by re-eſtabliſhing the Botanic Garden in the Iſland of St. Vincent, the SILVER MEDAL. See page 327.

PRESENTS

RECEIVED BY THE

SOCIETY,

SINCE THE PUBLICATION OF THE FIFTEENTH VOLUME OF THESE TRANSACTIONS.

With the Names of the Donors.

BOOKS.

The Royal Society.

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Three Views of the Iron Bridge over the River Wear, at Sunderland, in the County of Durham, one of which Prints is dedicated to the Society.

CHEMISTRY.

Arthur William Devis, Esq.

A small Instrument called a Nehrea, and used by the Natives of Hindoostan for scarifying the Heads of Poppies. See page 272.

POLITE ARTS.

Miss Knight.

A Bust of the late Earl of Chatham, formed of Tow and Leather.

MANUFACTURES.

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A Piece of Needle-work.

MECHANICKS.

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A CATALOGUE

OF THE

MODELS AND MACHINES

Received since the Publication of the Fifteenth Volume of the Society's Transactions, with the Numbers as they are arranged, in the Class to which they belong.

MECHANICKS. CLASS IV.

No. CLXXVII. A MODEL of a Machine for Drawing Bolts both into and out of Ships, by Capt. Bolton, R. N. for which he had the Gold Medal, a Bounty. See Page 318.

CLXXVIII. A Model of an Improved Mangle, presented by Mr.

George Jee, for which he had a Bounty, the Silver Medal. See page 303.

CLXXIX. A Vent Screw for a Beer Barrel, preſented by Mr. George Jee. See page 374.

CLXXX. A Pair of Rack Bolts, for a Cabinet, preſented by Mr. William Bullock. See page 374.

CLXXXI. An improved or new-invented Eſcapement, by Mr. John Prior, for which he had a Bounty of Thirty Guineas. See page 306.

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OF THE

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AND

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††Fife,

F.

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Fludyer, Sir Samuel, Bart. *Baker-ſtreet, Mancheſter-ſquare*
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Farmer, Samuel, Eſq. *Beckenham, Kent*
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G.

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I.

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K.

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Kinnaird, George Lord, F. R. and A. S.
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* Montagu, Mrs. Elizabeth, *Portman-ſquare*
Morley, William, Eſq. *New Broad-ſtreet*
Morſe, Leonard, Eſq. F. R. S. and S. A. *Great George-ſtreet, Weſtminſter*
Morris, Mr. William, *Whitcombe-ſtreet*
Mortimer, Charles, Eſq. *Conduit-ſtreet*
Moſely, Walter Michael, Eſq. *near Worceſter*
Moſer, Mr. John, *Frith-ſtreet, Soho*
Mulcaſter, Colonel Frederick George, *Portſmouth*

Munn, Daniel Rolfe, Esq. *Hammersmith*
Murrey, John, M.D. *Bedford-street, Bedford-square*

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Northesk, William Earl of
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Nash, John, Esq. *Dover-street*
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P Newton, Andrew, Esq. *Cecil-street, Strand*
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Nouaille, Peter, Eſq. *Greatneſs, Kent*
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O.

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Ord, John, Eſq. F. R. and A. S. *Lincoln's-inn-fields*
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P.

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P Plymouth, Otho Earl of, F. R. and A. S.
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Pelham, the Right Honourable Thomas, M. P. *Stratton-ſtreet*
* Puſey, Honourable Philip, *Upper Brook-ſtreet*
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Parker, Mr. William, *Fleet-ſtreet*
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Pringle, Mark, Eſq. M. P. *Conduit-ſtreet*
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Pryce, Benjamin, Eſq. *Saliſbury*
Pryce, Thomas, Eſq. *Devonſhire-ſtreet, Queen's-ſquare*
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R.

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Savage, Mr. James, *Great Queen-ſtreet*

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T.

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U.

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Upton, Charles, Esq. *Derby*

V.

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